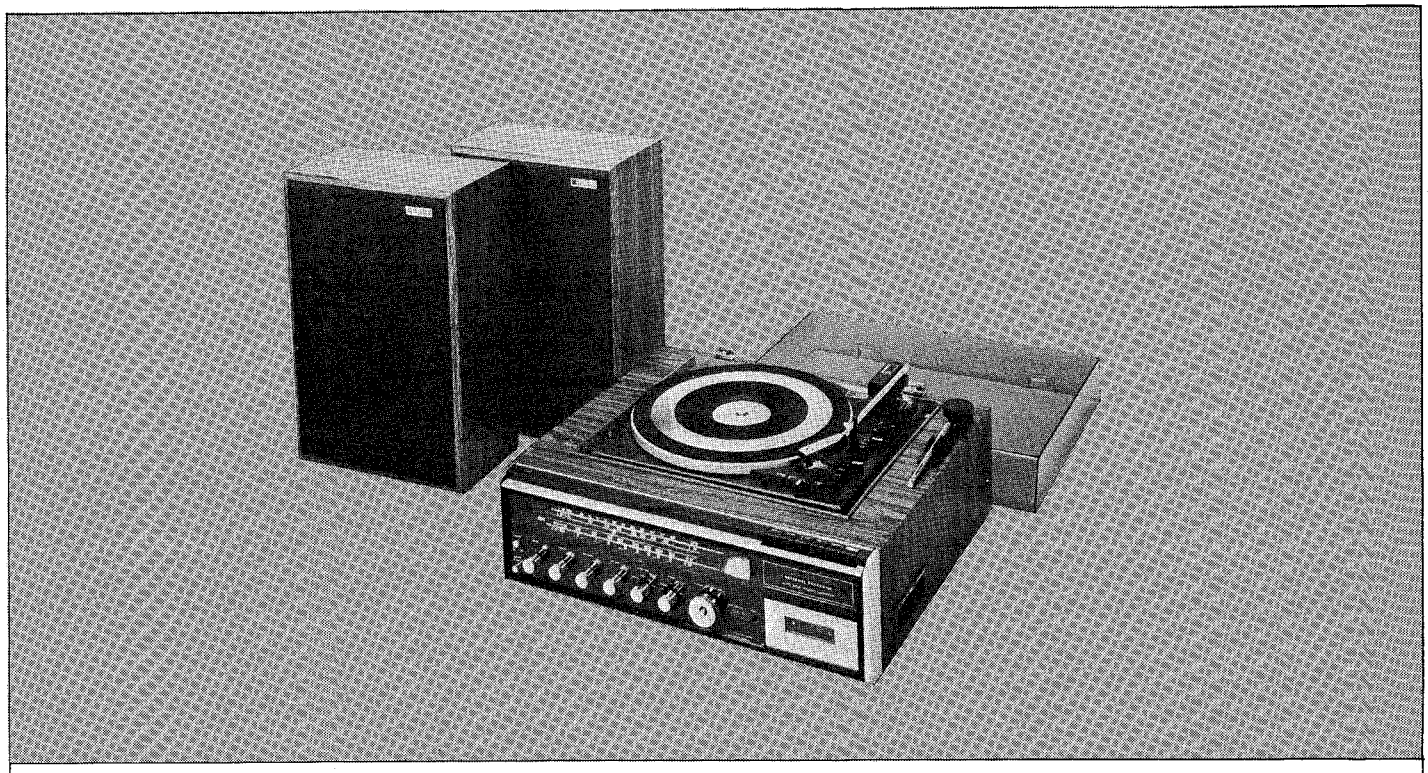
Service Manual

NATIONAL
COMPACT STEREO
PANASONIC



MODEL SG-2050L

SPECIFICATIONS

AMPLIFIER SECTION:
- Power Output: 15W-15W
- Input Sensitivity and Impedance: 150mV 50kΩ (AUX)
- REC Out (FM): For FM Input signal 60dB Mod. 30%
- Loudness Control: 5dB (100Hz)

FM TUNER SECTION:
- FM Usable Sensitivity: 5μV/50mW (S/N 30dB), 300Ω Balanced
- FM Harmonic Distortion: Less than 0.6% (Input Level 60dB)
- Signal to Noise Ratio: 50dB 100% 60dB (MONO)
- FM Stereo Separation (at 1kHz): 36dB

AM TUNER SECTION:
- LW Sensitivity: 30μV/50mW
- MW Sensitivity: 100μV/m/50mW
- SW Sensitivity: 10μV/50mW

RECORD CHANGER SECTION:
- Turntable: 28cm, Automatic
- Speed: 33-1/3, 45 and 78 RPM (3-speed)
- Motor: 2E-10RPL (4-pole)
- Cartridge: EPC-82SMBD
- Stylus: Diamond, EPS-31STSD

CASSETTE TAPE DECK SECTION:
- Tape Speed: 4.75cm/sec.
- Record/Playback Head: WY425Z
- Erase Head: WY235X
- Recording System: AC Bias 53kHz
- Erasure System: AC Erase
- Motor: Electric Governor Control MHI5R2CS
- Frequency Response: 80 ~ 10000Hz (±3dB)

SPEAKER SECTION:
- System: 2-way 2-speaker, Air suspension Type
- Woofer: 18cm Hi-compliance Cone Type
- Tweeter: 5cm Cone-Type
- Impedance: 8Ω

POWER SUPPLY: AC 100-115V, 115-130V, 200-225V, 225-250V 50~60Hz

DIMENSIONS (W x H x D):
- Center Unit: 481 x 217 x 433 mm (18-15/16") (8-17/32") (17-3/64")
- Speaker System: 275 x 425 x 152 mm (10-13/16") (16-23/32") (5-63/64")

WEIGHT:
- Center Unit: 15.4 kg (34 lbs.)
- Speaker System: 3.4 kg (7.5 lbs.) each

MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288, Central Osaka, Japan

ORDER NO. TSD-198

DISASSEMBLY INSTRUCTIONS

■ **To Remove Record Changer (Refer to Figs. 1 and 2)**

1. Loosen the changer transit screw, as shown in Fig. 1.
2. Turn retaining clip of changer transit screw, as shown in Fig. 1.
3. Unplug plug housing from receptacle housing, as shown in Fig. 1.
4. Remove changer by lifting it slightly in back and sliding it toward rear of cabinet. Unplug two (2) PU plugs.
5. To reassemble, reverse above procedure.

■ **To Remove Escutcheon with Cassette Tape Deck (Refer to Figs. 2, 3 and 4)**

1. Remove four (4) cabinet mounting screws Nos. 1 ~ 4, as shown in Fig. 2.
2. Remove six (6) cabinet mounting screws Nos. 1 ~ 6, as shown in Fig. 3.
3. Unplug plug housing and two (2) PU plugs.
4. Lift cabinet with record changer from body.
5. Remove seven (7) knobs.
6. Remove five (5) escutcheon mounting screws, Nos. 7 ~ 11, as shown in Fig. 3.
7. Remove three (3) escutcheon mounting screws, Nos. 1 ~ 3, as shown in Fig. 4.
   Remove one (1) bracket for cassette cover mounting screw, No. 4 as shown in Fig. 4.
8. Unplug cassette circuit board from 16P connector.
9. To reassemble, reverse above procedure.

■ **To Remove Cassette Tape Deck (Refer to Figs. 2, 3, 4 and 5)**

1. Follow instruction 1 to 8 above (Escutcheon Removal).
2. Remove two (2) cassette deck mounting screws Nos. 1 ~ 2, as shown in Fig. 5.
3. To reassemble, reverse above procedure.

■ **To Remove Level Meter (or Meter Lamp and/or Stereo Eye)**

1. Follow instruction 1 to 4 above (Escutcheon Removal).
2. Remove four (4) meter bracket mounting screws Nos. 1 ~ 4, as shown in Fig. 6.
3. Remove level meter (or meter lamp and/or stereo eye).
4. To reassemble, reverse above procedure.

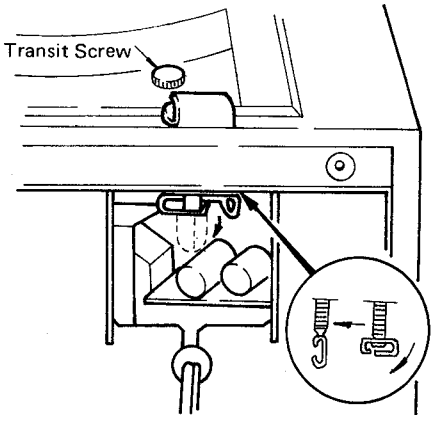


Fig. 1 REAR VIEW (REAR COVER OPEN)

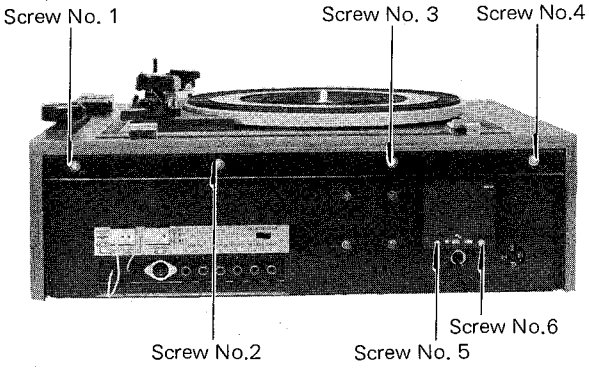


Fig. 2 REAR VIEW

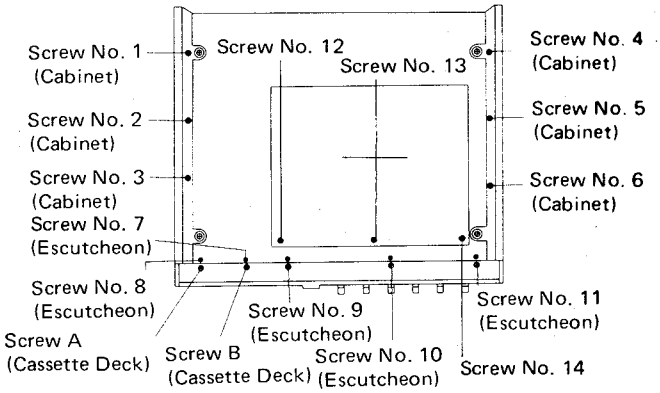


Fig. 3 BOTTOM VIEW

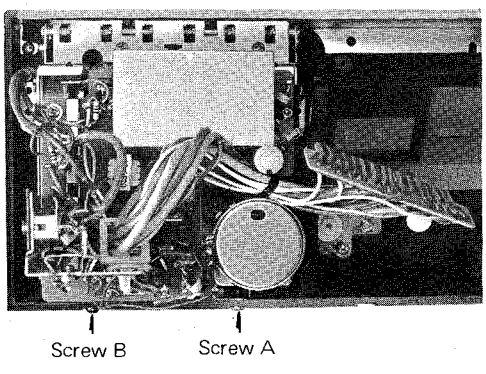


Fig. 5 CASSETTE TAPE DECK

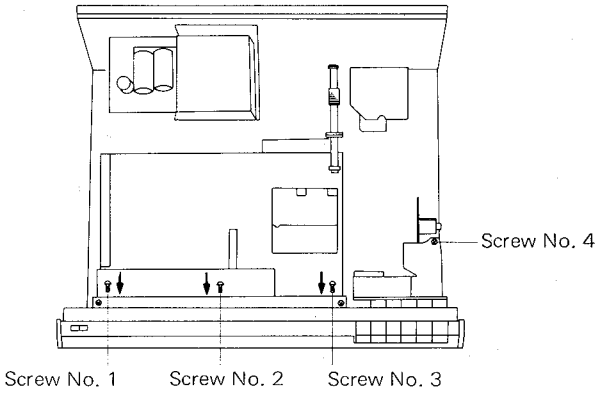


Fig. 4 TOP VIEW

DISASSEMBLY INSTRUCTIONS

■ **To Remove Components from Printed Circuit Board (Refer to Fig. 3)**

1. Follow instruction 1 to 4 above (Escutcheon Removal).
2. Remove three (3) bottom board mounting screws Nos. 12 ~ 14, as shown in Fig. 3.
3. Unsolder component and replace new component.

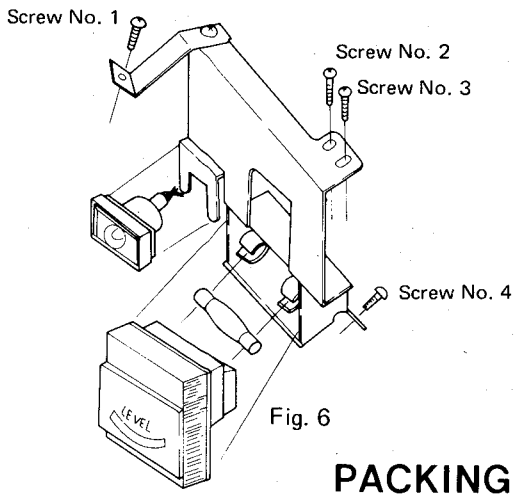
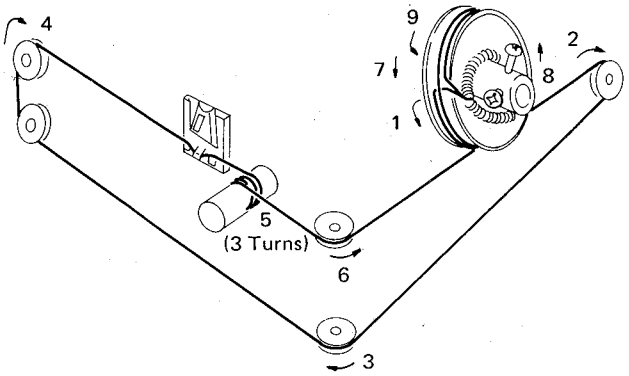


Fig. 6

DIAL CORD STRINGING GUIDE



Dial Cord Length: 47-15/64" (120 cm)
Position: Opened Position (Minimum Capacity)

Fig. 7

PACKING PROCEDURE

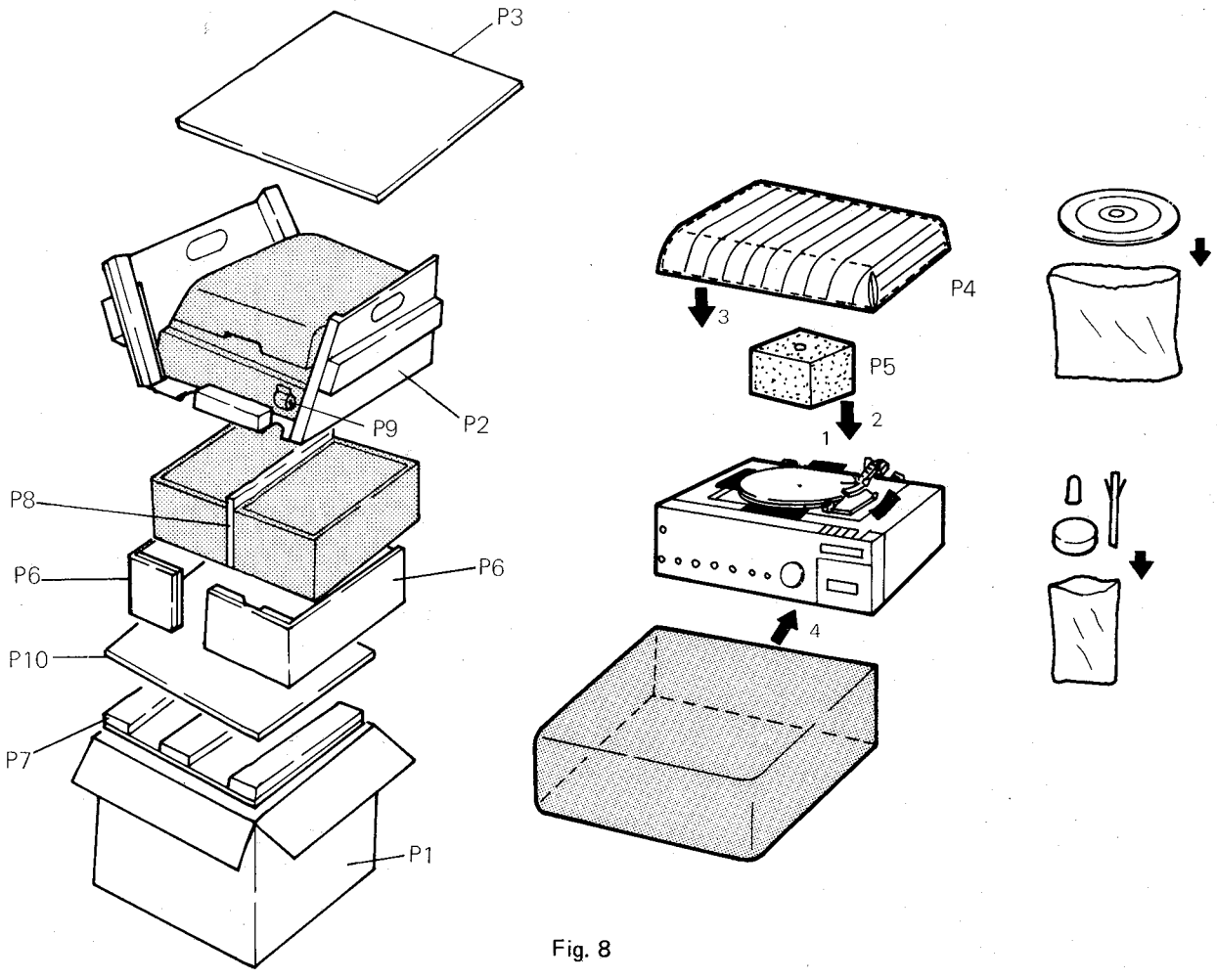


Fig. 8

ALIGNMENT INSTRUCTIONS

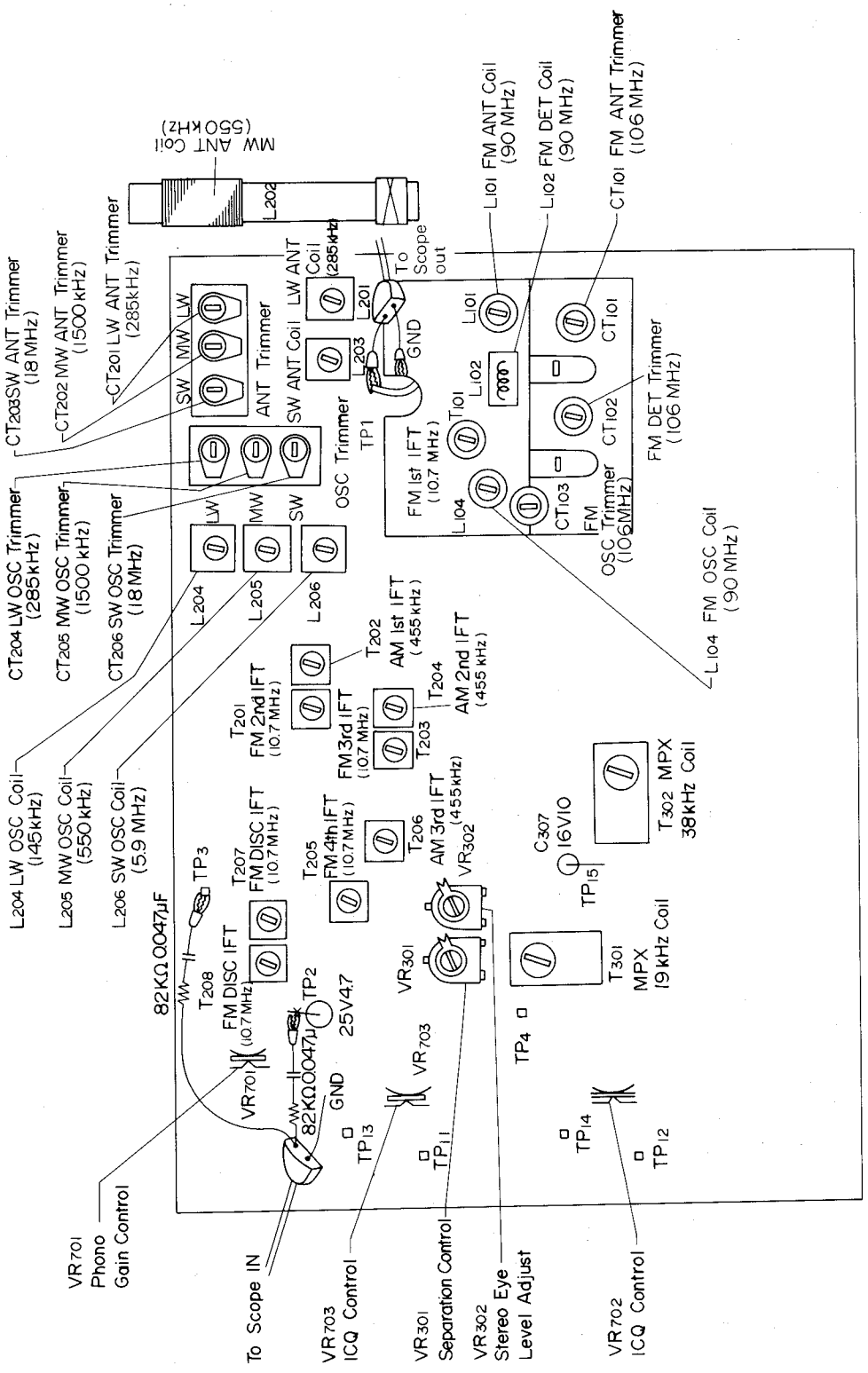


Fig. 9 ALIGNMENT POINTS

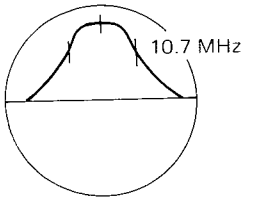


Fig. 10-a

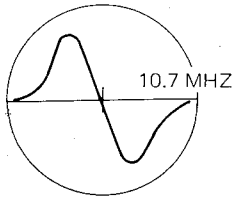


Fig. 10-b

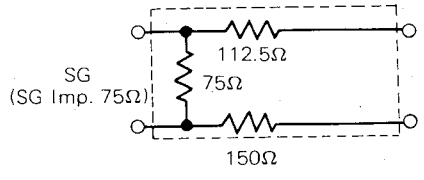


Fig. 11

ALIGNMENT INSTRUCTIONS (RADIO)

Notes:

Audio Generator . . . . . 1kHz into L & R AUX inputs
Attenuator . . . . . Connect Audio Generator
Function Selector . . . . . "AUX"
Volume Control . . . . . Maximum
Balance Control . . . . . Center

STEP	ALIGNMENT	INDICATOR	ADJUST
1	AF GAIN BALANCE ALIGNMENT	VTVM of SCOPE to left and right speaker jacks.	VR701

REMARKS:
Make sure two VTVMs are balanced so that right channel output equals left.

FREQUENCY & DISTANCE ON DIAL SCALE

To accurately align to the proper frequencies on the dial scale, refer to Table at right and mark the edge of the dial scale accordingly, using the "Start Point" mark on the dial scale as a reference point.

Band	Frequency	Distance from "Start Point"
LW	145kHz 285kHz	10.4mm 125.8mm
MW	550kHz 1500kHz	14.5mm 123.8mm
SW	5.9MHz 18MHz	5.4mm 133.1mm
FM	90MHz 106MHz	15.3mm 113.7mm

Notes:

1. Volume Control . . . . Maximum (AM-IF & RF, FM-RF): Minimum (FM-IF)
2. Treble Control . . . . . Center
3. Bass Control . . . . . Center
4. Balance Control . . . . . Center
5. Function Selector . . . . RADIO
6. Band Selector . . . . . AM, FM, FM STEREO
7. AFC Switch . . . . . OFF (FM-IF & RF)
8. Power Switch . . . . . ON
9. Output of signal generator should be no higher than necessary to obtain output reading.
10. Make certain that speaker system is connected to the tuner when aligning.

STEP	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
	AM-IF & RF ALIGNMENT					
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400Hz	Point of non-interference (on/about 600kHz)	Output meter across speaker jack (L) (Imp. 8Ω)	T202 (1st IFT) T204 (2nd IFT) T206 (3rd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of receiver.	145kHz 30% Mod. with 400Hz	145kHz (10.4mm)	Output meter across speaker jack (L) (Imp. 8Ω)	L201 (LW ANT Coil) L204 (LW OSC Coil)	Adjust for maximum output.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver.	285kHz 30% Mod. with 400Hz	285kHz (125.8mm)	Output meter across speaker jack (L) (Imp. 8Ω)	CT201 (LW ANT Trimmer) CT204 (LW OSC Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
4	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550kHz 30% Mod. with 400Hz	550kHz (14.5mm)	Output meter across speaker jack (L) (Imp. 8Ω)	L202 (MW ANT Coil) L205 (MW OSC Coil)	Adjust for maximum output by sliding coil (L202) along ferrite core.
5	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500kHz 30% Mod. with 400Hz	1500kHz (123.8mm)	Output meter across speaker jack (L) (Imp. 8Ω)	CT202 (MW ANT Trimmer) CT205 (MW OSC Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
6	Fashion loop of several turns of wire and radiate signal into loop of receiver.	5.9MHz 30% Mod. with 400Hz	5.9MHz (5.4mm)	Output meter across speaker jack (L) (Imp. 8Ω)	L203 (SW ANT Coil) L206 (SW OSC Coil)	Adjust for maximum output by sliding coil (L202) along ferrite core.
7	Fashion loop of several turns of wire and radiate signal into loop of receiver.	18MHz 30% Mod. with 400Hz	18MHz (133.1mm)	Output meter across speaker jack (L) (Imp. 8Ω)	CT203 (SW ANT Trimmer) CT206 (SW OSC Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
	***1. Cement antenna bobbin with wax after completing alignment.**					
	FM-IF & DETECTOR ALIGNMENT					
1	High side thru. 0.001 mfd to point TP1. Common to chassis.	10.7MHz (400kHz SWP.)	Point of non-interference (on/about 98MHz)	Connect vert. amp. of scope to point TP5. Common to chassis.	T101 (FM 1st IFT) T201 (FM 2nd IFT) T203 (FM 3rd IFT) T205 (FM 4th IFT)	Adjust for maximum amplitude and symmetrical curve. (Refer to Fig. 10-a)
2	High side thru. 0.001 mfd to point TP1. Common to chassis.	10.7MHz (400kHz (SWP.)	Point of non-interference (on/about 98MHz)	Connect vert. amp. of scope to point TP3. Common to chassis.	T207 (FM Disc. IFT) T208 (FM Disc. IFT)	Adjust for maximum amplitude and proper linearity between ±100kHz markers. (Refer to Fig. 10-b)
	*** Before aligning step 1, turn the cores of T207 and T208 fully counterclockwise.**					

ALIGNMENT INSTRUCTIONS (RADIO)

STEP	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
FM-RF ALIGNMENT						
1	Connect to EXT. FM antenna terminal through Dummy antenna. Common to chassis. (Refer to Fig. 11.)	90MHz 30% Mod. with 400Hz	90MHz (15.3mm)	Output meter across speaker jack (L). (Imp. 8Ω)	L104 (FM OSC Coil) L101 (FM ANT Coil) L102 (FM DET Coil)	Adjust for maximum output.
2	Connect to EXT. FM antenna terminal through Dummy antenna. Common to chassis. (Refer to Fig. 11.)	106MHz 30% Mod. with 400Hz	106MHz (113.7mm)	Output meter across speaker jack (L). (Imp. 8Ω)	CT103 (FM OSC Trimmer) CT101 (FM ANT Trimmer) CT102 (FM DET Trimmer)	Adjust for maximum output. Repeat steps (1) and (2).

*** As three output readings will be present, adjustments must be made at center frequency.**
*** To correct drift at the FM dial scale (87.5 or 108MHz), adjust coil L104 and trimmer CT103 each other.**

Notes:

1. Stereo Modulator . . . . . Connect Stereo Modulator to EXT. Mod. terminal of signal generator
2. Signal Generator . . . . . Modulation Rate of 19kHz Pilot Signal 10%
   Output Level 30dB
   Frequency . . . . . Approx. 98MHz
3. Tuner . . . . . Approx. 98MHz
   Volume Control . . . . . Audible level of speaker sound
   Treble Control . . . . . Center
   Bass Control . . . . . Center
   Band Selector . . . . . FM STEREO
   Balance Control . . . . . Center

19kHz AMP. ALIGNMENT

EQUIPMENT CONNECTION		ADJUST	REMARKS
SIGNAL GENERATOR	OSCILLOSCOPE		
Connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 11.)	Connect vert. Amp. of scope to point TP4. Common to chassis.	T301 (19kHz Coil)	Adjust for maximum oscilloscope pattern of 19kHz.

SEPARATION ALIGNMENT

Notes:

1. Signal Generator . . . . . Modulation Rate of 19kHz Pilot Signal 10%
   Modulation Rate of Right and Left Signal 27%
   Output Level 60dB
2. Tuner (Balance Control) . . . Adjust balance control so that output level from both channels becomes equal.

EQUIPMENT CONNECTION			ADJUST	REMARKS
SIGNAL GENERATOR		OSCILLOSCOPE		
Connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 11)	Connect across speaker jack. (Left side) (Imp. 8Ω)	Connect to terminals of VTVM	T302 (MPX Coil)	Adjust T302 for minimum indication on VTVM from the left side output when the right side of stereo modulator is modulated.
Connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 11.)	Connect across speaker jack. (Left side) (Imp. 8Ω)	Connect to terminals of VTVM	VR301 (Separation Control)	Adjust VR301 for minimum indication on VTVM from the left side output when the right side of stereo modulator is modulated.

* Before separation alignment, disconnect lead between TP4 and Oscilloscope.

STEREO EYE LEVEL CHECK AND ALIGNMENT

Connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 11)	Connect across speaker jack. (Left side) (Imp. 8Ω)	Connect to terminals of VTVM	VR302 (Stereo Eye Level Adjust)	Stereo eye should light up when about 17dB is applied from signal generator. If not, adjust VR302 to light up.

POWER AMP. ALIGNMENT

1. VTVM, RC OSCILLATOR
2. Tuner . . . Volume Control . . . Maximum
   Balance Control . . . Center

PHONO GAIN ALIGNMENT

EQUIPMENT CONNECTION		ADJUST	REMARKS
RC OSCILLATOR	VTVM		
Connect to PU pin plug (left) INPUT LEVEL . . . 10mV	Connect across speaker jack. (Imp. 8Ω)	VR701 (Gain Control)	Adjust VR701 so that left indication on VTVM becomes equal to right indication.

ICQ ALIGNMENT

Volume Control. . . minimum	Connect to TP12 and TP14 Connect to	VR702 (R Channel) VR703 (L Channel)	Make adjustments so that the indication on VTVM (DC) becomes 16mV±2mV.

ALIGNMENT INSTRUCTIONS (TAPE RECORDER)

Notes:
Function Selector . . . . . TAPE
Balance Control . . . . . Center
Depress push buttons PLAY and REC at the same time.

* Refer to Fig. 12.

STEP	CIRCUITS	VTVM CONNECTION	VOLUME CONTROL	ADJUSTMENT	REMARKS
1	AC BIAS OSCILLATOR & ERASE	Connect positive side to TP6 (+) and negative side to Lug 21 (–). (Refer to Fig. 12)	MIN.	T801 (AC Bias OSC) VR801 (Voltage Control)	Adjust T801 for maximum indication of VTVM-1. Adjust VR801 for 13V reading on VTVM-1.
2	AC BIAS OSCILLATOR & ERASE	Connect positive side to TP8 and negative side to TP7. (Refer to Fig. 12)	MIN.	L803 (AC Bias Trap Coil)	Adjust L803 for 5mV reading on VTVM-2.
3	AC BIAS OSCILLATOR & ERASE	Connect positive side to TP10 and negative side to TP9. (Refer to Fig. 12)	MIN.	L802 (AC Bias Trap Coil)	Adjust L802 for 5mV reading on VTVM-3. Repeat steps (2) and (3).
4	AC BIAS OSCILLATOR & ERASE	Connect positive side to TP10 and negative side to TP9. (Refer to Fig. 12)	MIN.	T801 (AC Bias OSC)	Adjust T801 for maximum indications on VTVM-2 and 3.
5	AC BIAS OSCILLATOR & ERASE	Connect positive side to TP6 (+) and negative side to Lug 21 (–). (Refer to Fig. 12)	MIN.	VR801 (Voltage Control)	Adjust VR801 for 13V reading on VTVM-1. Repeat steps (2) and (3).

Notes: 1. Cement part of semi-fixed volume control (VR801), as shown in Fig. 13.
2. Do not touch R/P head and Erase head when adjusting.
3. As two maximum points is obtainable when adjusting the L803 and L802, adjustments should be done when the core is properly screwed in.

Fig. 13

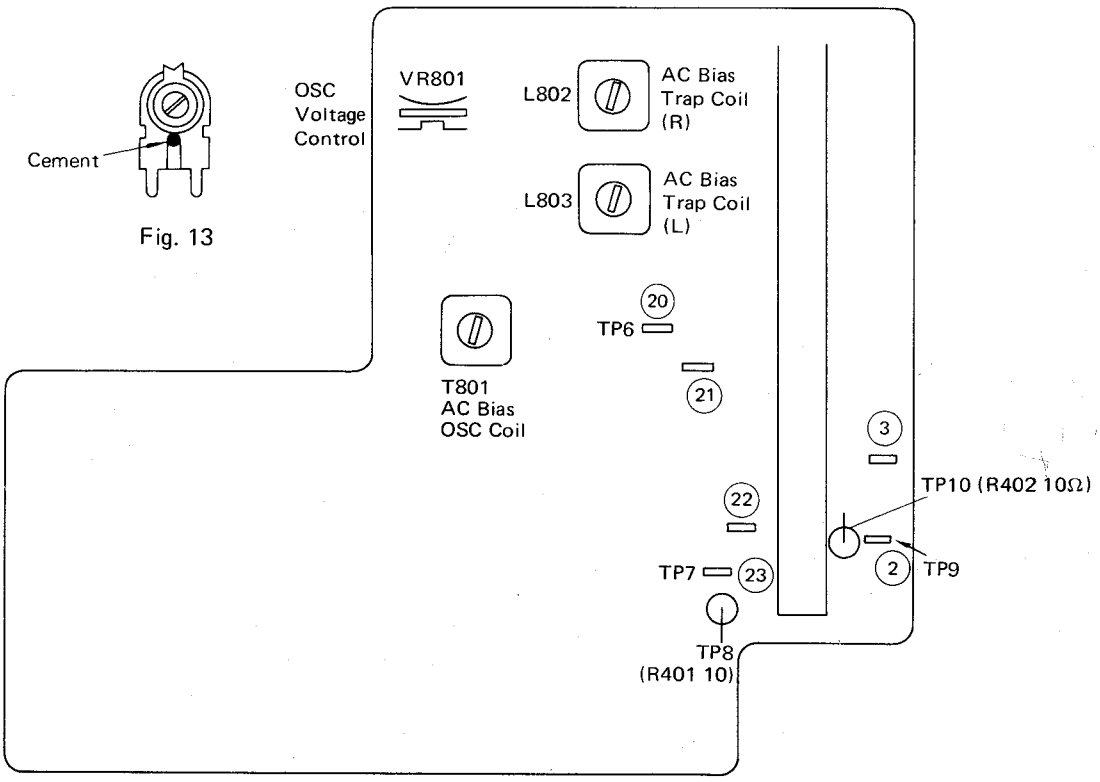


Fig. 12 ALIGNMENT POINTS

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

Playback a Standard Alignment Tape and turn head adjustment screw for maximum loudness.

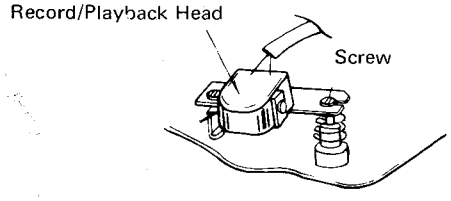


Fig. 14

MECHANICAL ADJUSTMENT-TAPE RECORDER

PINCH ROLLER ADJUSTMENT (Refer to Fig. 15)

1. Switch set to PLAY.
2. Pull pinch roller in the direction of arrows with spring gauge, as shown in Fig. 15.
3. Pull the pinch roller away from the capstan, start motor, permit the pinch roller to make contact with the capstan and measure tension at time of contact.
4. The standard pressure of pinch roller should be 400 ~ 500 g.
5. If pressure is beyond limits, change the fixed position of pinch roller spring and repeat the above measurement or replace pinch roller assembly.

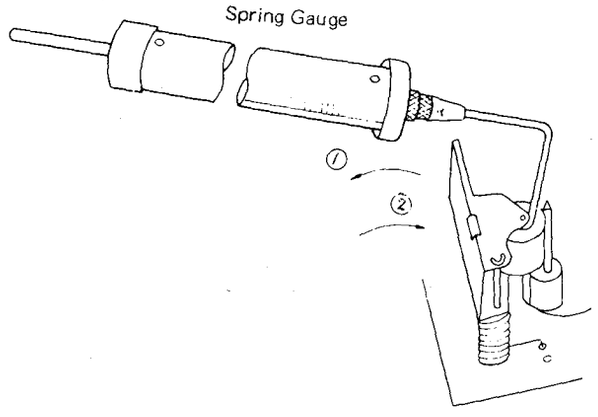


Fig. 15

TAKE-UP TORQUE ADJUSTMENT

*When adjusting take-up torque, set the cassette deck vertically.

Take-up Torque Measurement with Torque Meter (Refer to Fig. 16)

Equipment Required:

- Torque Meter (having a range of 20 ~ 100g cm)
- Attachment (Take reel out of cassette tape, make 2 holes through its frame, and attach it to the torque meter with wire.)

1. Switch set to PLAY and put attachment with the torque meter onto take-up reel.
2. The standard take-up tension of the take-up reel should be 40 ~ 70g cm.

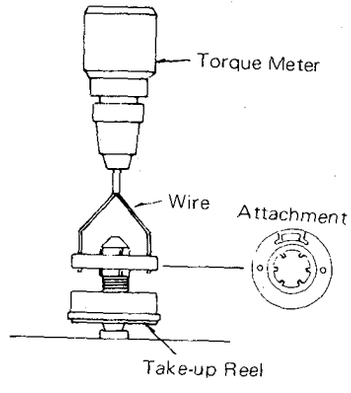


Fig. 16

Take-up Torque Measurement with Tension Gauge (Refer to Fig. 17)

Equipment Required:

- Tension Gauge
- Attachment

1. Switch set to PLAY.
2. Put attachment which is connected to tension gauge by cord (about 30cm) onto the take-up reel.
3. To read the number of the tension gauge, move the gauge in direction of arrow without slackening the cord.
4. The standard take-up tension of the take-up reel should be 40 ~ 70g cm.

If the take-up tension is beyond these limits;

a) remove oil and dirt from flywheel belt (44) and/or
b) remove oil and dirt from the rubber part of the take-up idler and/or
c) replace clutch felt or take-up arm on the take-up reel assembly (56).

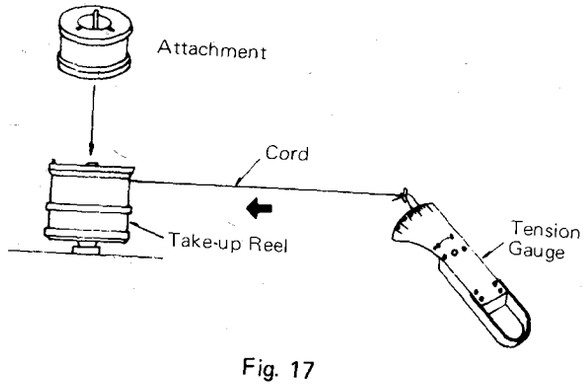


Fig. 17

SERVICING THE RECORD CHANGER

DISASSEMBLY INSTRUCTIONS

Turntable Assembly

1. Remove Automatic Spindle (1).
2. Remove Stopper Ring (4) from the top of Turntable Shaft.
3. Carefully Lift Turntable Assembly (5) off the Shaft.

Note:

Before replacing the Turntable Assembly (5), move Start Lever (14) to the "START" position and move idler Off Latch (37) clockwise until Idler Wheel (14) disengages from Capstan (39) and Turntable (5).
This action will allow Turntable (5) to drop into position without damaging the Idler Wheel (14).

Base Complete Plate Assembly

1. Disconnect the unit from the power supply.
2. Be sure that the mechanism is in the neutral position and that Pickup Arm (6) is on its Rest (13) and clamped.
3. Remove pickup leads from Base Plate (58).
4. Remove five Screws (66, 76) which attach the Base Plate (58) to the Main Plate (15), so that Base Plate Complete Ass'y (58) is removed too easily.

Note:

When replacing Base Plate complete Assembly (58), special care should be taken regarding the following points:

a) Shut Off Lever (50) must be placed on the switch side of the longest pin of Trip Lever (38).
b) Index Plate (50) must be placed on Start Lever (14) side of Select Lever Arm (28).
c) Push Lever (18) must be placed on the Cueing Guide (10) side of the projecting part of Actuating Slide (50).

Pickup Arm Assembly

1. Disconnect the pickup leads from the Terminals.
2. Remove Base Plate Assembly (58).
3. Remove Circlip (69), two Springs (23, 27), Washer (26), and Collar (25) which is around Lift Shaft (10).
4. Remove Pickup Control Lever Ass'y (24) by loosing two Screws (67).
5. Remove Nut (75) which attaches Pickup Arm Ass'y (6) and lift Pickup Arm Ass'y (6) upward.

Cueing Lift Ass'y

1. Remove Pickup Arm Ass'y (6) (step 3).
2. Remove Nut (22), Washer (21) and push Collar (20).

Note:

Be careful not to leak silicone grease from Collar (20).

Idler Wheel

1. Remove Turntable (5).
2. Remove Circlip (68) and carefully lift off Idler Wheel (14).

Attention:

Don't touch the friction surface of the Idler Wheel nor allow friction surface to come into contact with any oil or grease.

The Record Changer Mechanism is well lubricated before leaving the factory, however, after prolonged use, it is advisable to re-lubricate certain parts.
A medium grade grease or oil should be applied to the points shown in Fig. 18 and 19.
DO NOT TOUCH THE OUTSIDE EDGE OF THE IDLER WHEEL OR LET IT COME INTO CONTACT WITH ANY OIL OR GREASE.

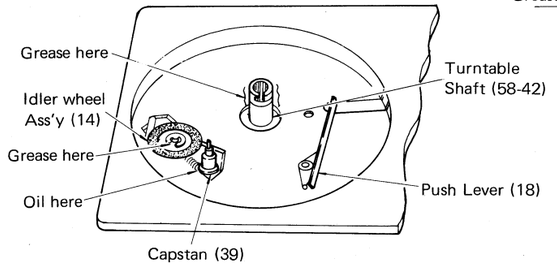


Fig. 18

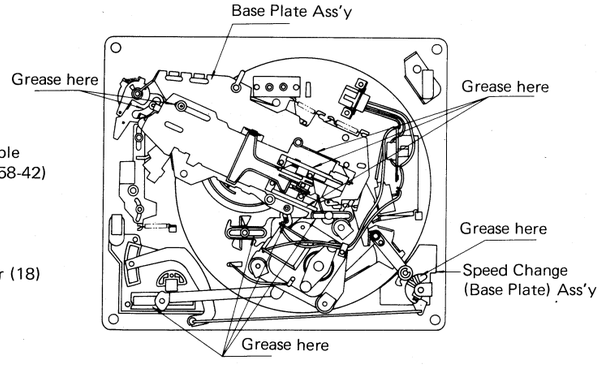


Fig. 19

This unit has been subjected to the most rigorous inspections and tests before leaving the factory, where all necessary adjustments have been made to ensure the satisfactory playing of records.
The following information is provided, should it become necessary to make any minor adjustment.

Stylus Pressure

The stylus pressure should always be set as recommended be cartridge manufacture.
The pressure is adjusted by means of the stylus pressure adjusting screw (Fig. 20).
Turning the screw clockwise as viewed from the front increases the pressure, counterclockwise reduces the pressure.

Anti-skating Control

Having set the stylus pressure 3.5 gr. is recommended and Anti-skating Control Knob (Fig. 20) to the "▶" position, the Anti-skating force is adjusted to correspond to the stylus pressure applied.
Moving knob toward "+" increases the Anti-skating force, toward "—" reduces the force.

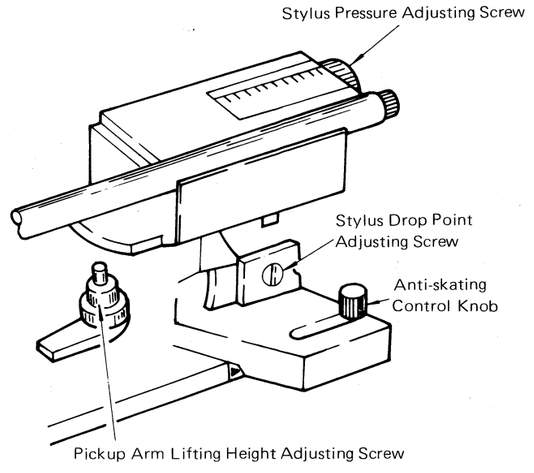

Stylus Pressure Adjusting Screw
Stylus Drop Point Adjusting Screw
Anti-skating Control Knob
Pickup Arm Lifting Height Adjusting Screw

Fig. 20 MODEL 300

Stylus Drop Point

Turning the stylus drop point adjusting screw (Fig. 20) clockwise moves Pickup inward, counterclockwise moves it outward.

Pickup Arm Lifting Height

If Pickup Arm (6) does not lift enough to clear the top record of a stack on the turntable when returning to its rest, turn the Pickup Lifting Height Adjusting Screw (Fig. 10 4) counterclockwise to raise the pickup.
The stylus should lift 15.0 mm above the face of a single record on the Turntable as Pickup Arm (6) returns to it Rest (13). Turning the screw clockwise, Pickup Arm (6) is lowered.

Idler Wheel Height

To raise, turn screw counterclockwise; to lower, turn screw clockwise.
Adjust Idler Wheel (11) Height as shown in Fig. 21.

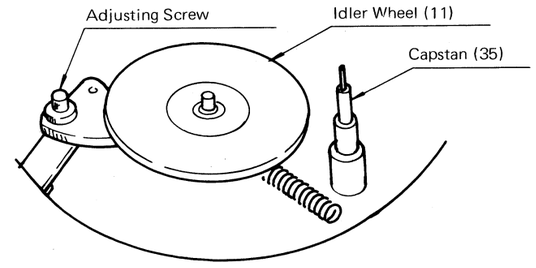


Fig. 21

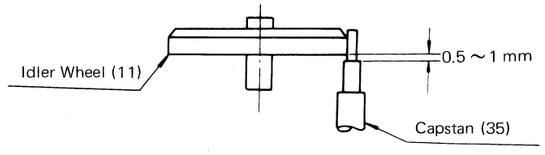
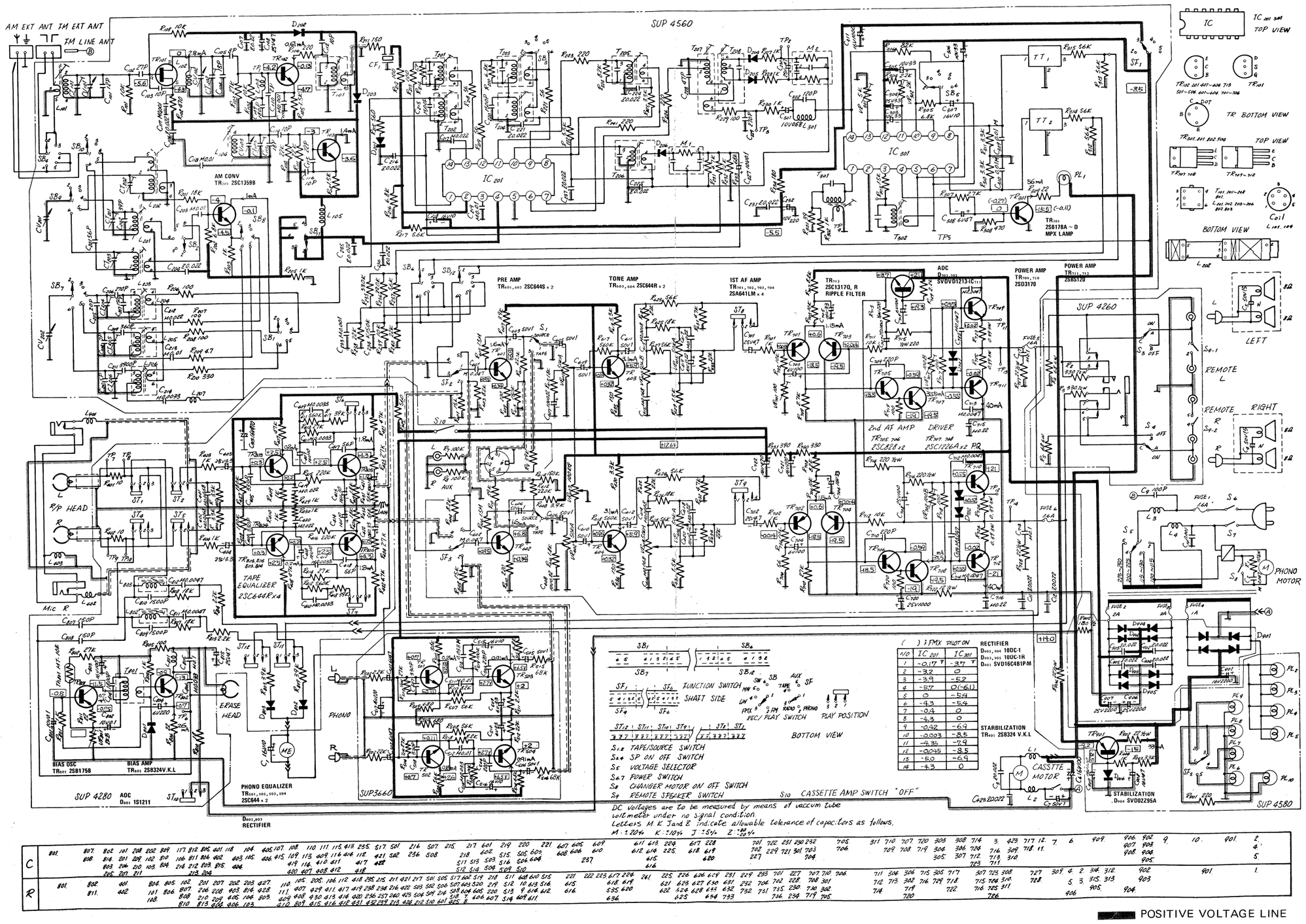
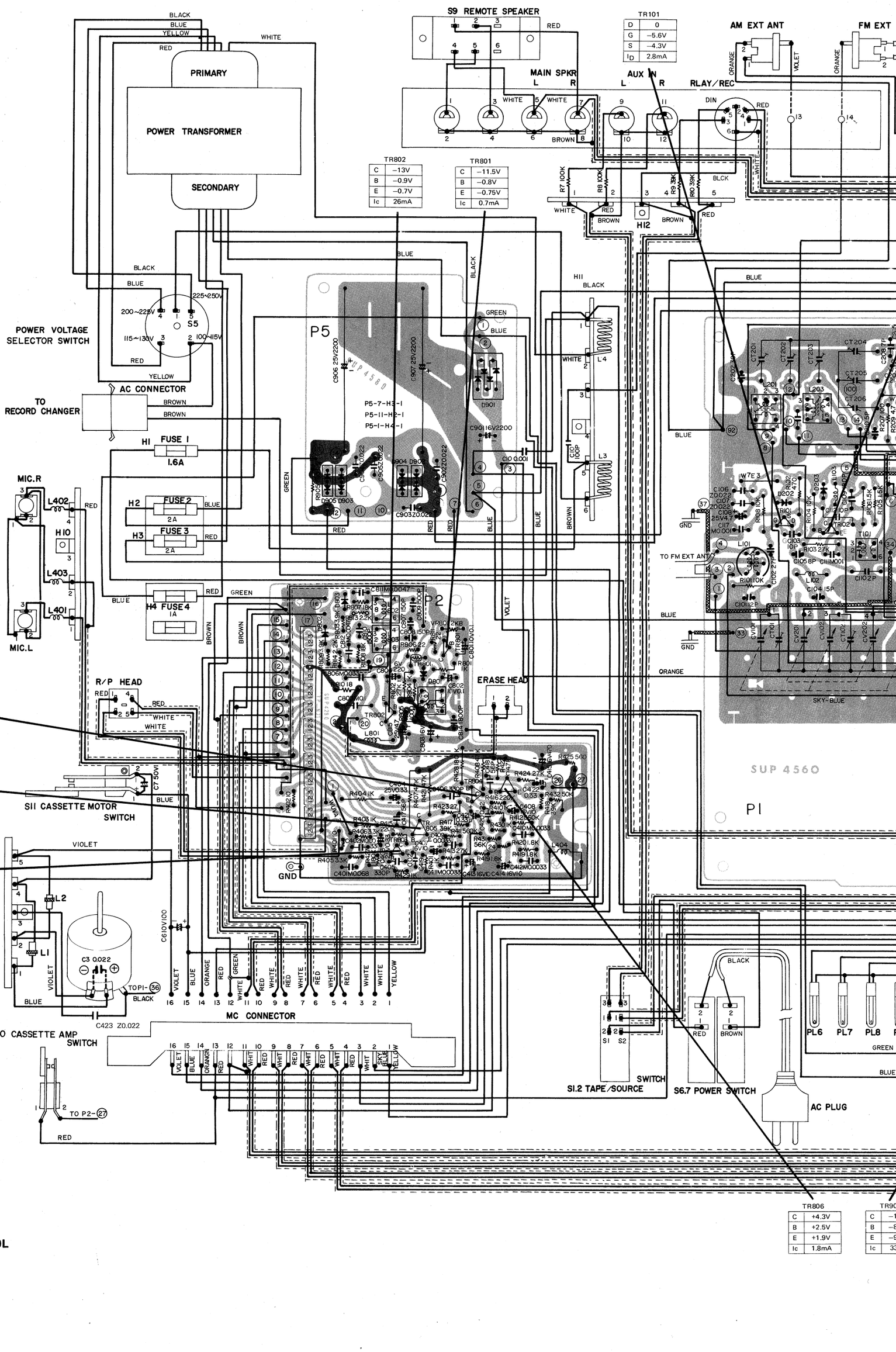


Fig. 22

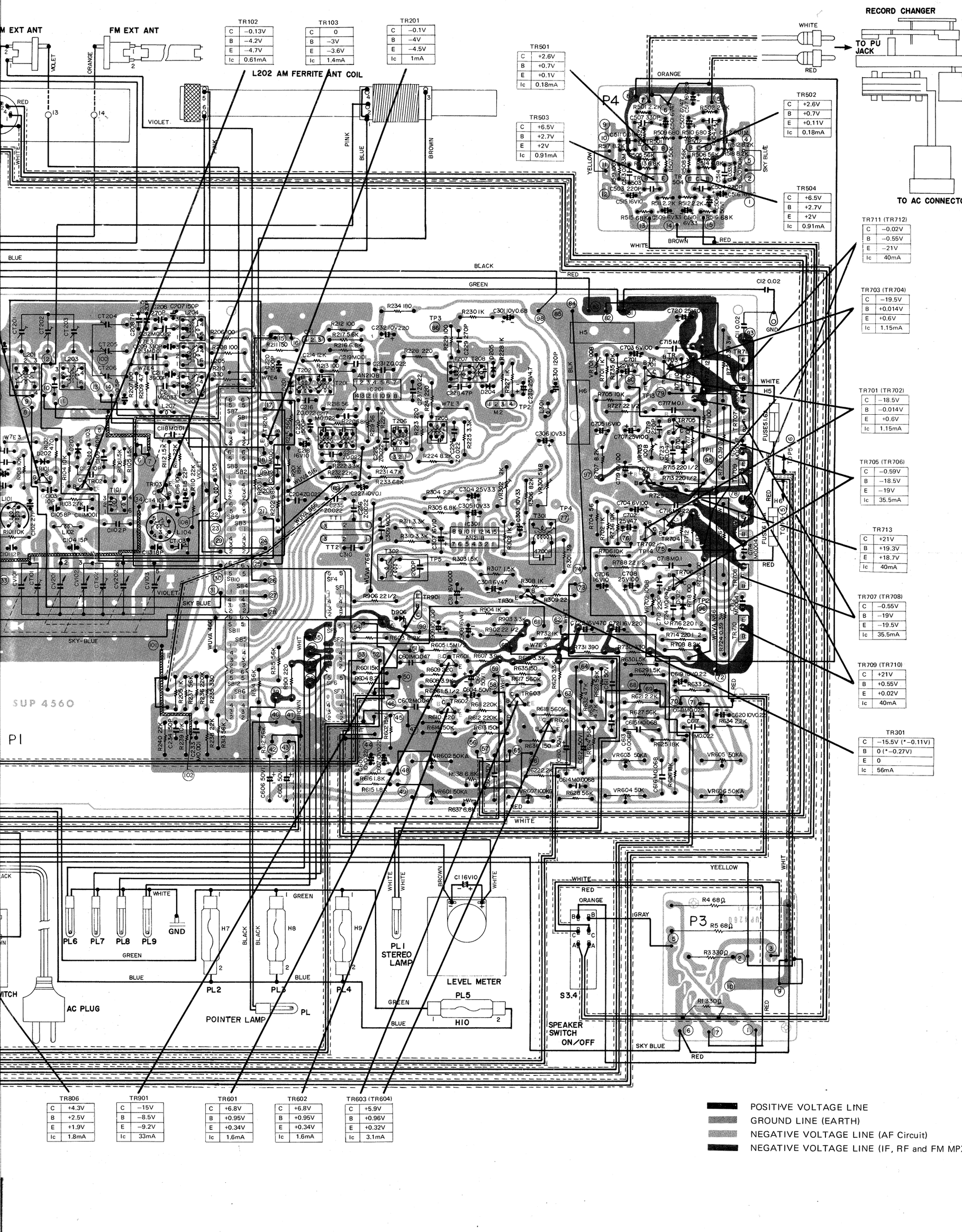
SCHEMATIC DIAGRAM MODEL SG-2050L


FM RF AMP TR101 2SK19GR
FM MIXER TR102 2SC1359B
FM OSC TR103 2SC1359C
AM D. AGC D201 0A90
FM AGC D202,203 0A90 x 2
IC201 IF AMP AN210B
AM DET D206 0A90
FM DET D204,205 20A90
IC301 MPX DET AN211
AM EXT ANT FM EXT ANT
FM LINE ANT
SUP 4560
AM CONV TR201 2SC1359B
PRE AMP TR601,602 2SC644S x 2
TONE AMP TR603,604 2SC644R x 2
1ST AF AMP TR701,702,703,704 2SA641LM x 4
TR313 2SC1317Q, R RIPPLE FILTER
ADC Bridge SVD01213-IC311
POWER AMP TR709,710 2SD3170
POWER AMP TR711,712 2SB520
SUP 4260
2nd AF AMP DRIVER
TR705,706 2SC828 x 2
TR707,708 2SC1226A x 2 PQ
TAPE EQUALIZER 2SC644R x 4
BIAS OSC TR801 2SB175B
BIAS AMP TR802 2SB324V.K.L
AOC D801 1S1211
PHONO EQUALIZER TR801,802,803,804 2SC644 x 2
D807,803 RECTIFIER
SUP 4280
SUP3660
SUP 4580
IC201 SIP TOP VIEW
TR102 201 601~604 713 501~504 601~604 701~706 TR101 TR BOTTOM VIEW
TR801 802 708 TOP VIEW
TR803 708 TR804~812
TR801 802 803 804 BOTTOM VIEW
L202 Coil L101 109
TR301 2SB178A ~ D MPX LAMP
STABILIZATION TR801 2SB324 V.K.L
STABILIZATION D804 SVD02Z95A
RECTIFIER D901,902,903,904 100C-1 D905,906 100C-1R D801 SVD16C4B1P-M
( ) : FMX PILOT ON
SB1 SB2 SB3 SB4 SB5 SB6 SB7 SB8 SF1 SF2 FUNCTION SWITCH SHAFT SIDE
REC/PLAY SWITCH PLAY POSITION BOTTOM VIEW
S1,2 TAPE/SOURCE SWITCH
S3,4 SP ON OFF SWITCH
S5 VOLTAGE SELECTOR
S6,7 POWER SWITCH
S8 CHANGER MOTOR ON OFF SWITCH
S9 REMOTE SPEAKER SWITCH
S10 CASSETTE AMP SWITCH "OFF"
DC voltages are to be measured by means of vaccum tube voltmeter under no signal condition
Letters M, K, J and Z indicate allowable tolerance of capacitors as follows.
M : ±20% K : ±10% J : ±5% Z : +80% -20%
POSITIVE VOLTAGE LINE
GROUND LINE (EARTH)
NEGATIVE VOLTAGE LINE (AF Circuit)
NEGATIVE VOLTAGE LINE (IF, RF and FM MPX Circuit)

CIRCUIT BOARD WIRING VIEW



D WIRING VIEW MODEL SG-2050L



TR102

C	−0.13V
B	−4.2V
E	−4.7V
Ic	0.61mA

TR103

C	0
B	−3V
E	−3.6V
Ic	1.4mA

TR201

C	−0.1V
B	−4V
E	−4.5V
Ic	1mA

TR501

C	+2.6V
B	+0.7V
E	+0.1V
Ic	0.18mA

TR502

C	+2.6V
B	+0.7V
E	+0.11V
Ic	0.18mA

TR503

C	+6.5V
B	+2.7V
E	+2V
Ic	0.91mA

TR504

C	+6.5V
B	+2.7V
E	+2V
Ic	0.91mA

TR711 (TR712)

C	−0.02V
B	−0.55V
E	−21V
Ic	40mA

TR703 (TR704)

C	−19.5V
B	+0.014V
E	+0.6V
Ic	1.15mA

TR701 (TR702)

C	−18.5V
B	−0.014V
E	+0.6V
Ic	1.15mA

TR705 (TR706)

C	−0.59V
B	−18.5V
E	−19V
Ic	35.5mA

TR713

C	+21V
B	+19.3V
E	+18.7V
Ic	40mA

TR707 (TR708)

C	−0.55V
B	−19V
E	−19.5V
Ic	35.5mA

TR709 (TR710)

C	+21V
B	+0.55V
E	+0.02V
Ic	40mA

TR301

C	−15.5V (*−0.11V)
B	0 (*−0.27V)
E	0
Ic	56mA

TR806

C	+4.3V
B	+2.5V
E	+1.9V
Ic	1.8mA

TR901

C	−15V
B	−8.5V
E	−9.2V
Ic	33mA

TR601

C	+6.8V
B	+0.95V
E	+0.34V
Ic	1.6mA

TR602

C	+6.8V
B	+0.95V
E	+0.34V
Ic	1.6mA

TR603 (TR604)

C	+5.9V
B	+0.96V
E	+0.32V
Ic	3.1mA

POSITIVE VOLTAGE LINE
GROUND LINE (EARTH)
NEGATIVE VOLTAGE LINE (AF Circuit)
NEGATIVE VOLTAGE LINE (IF, RF and FM MP)

EXPLODED VIEW OF RECORD CHANGER (SP-910E)

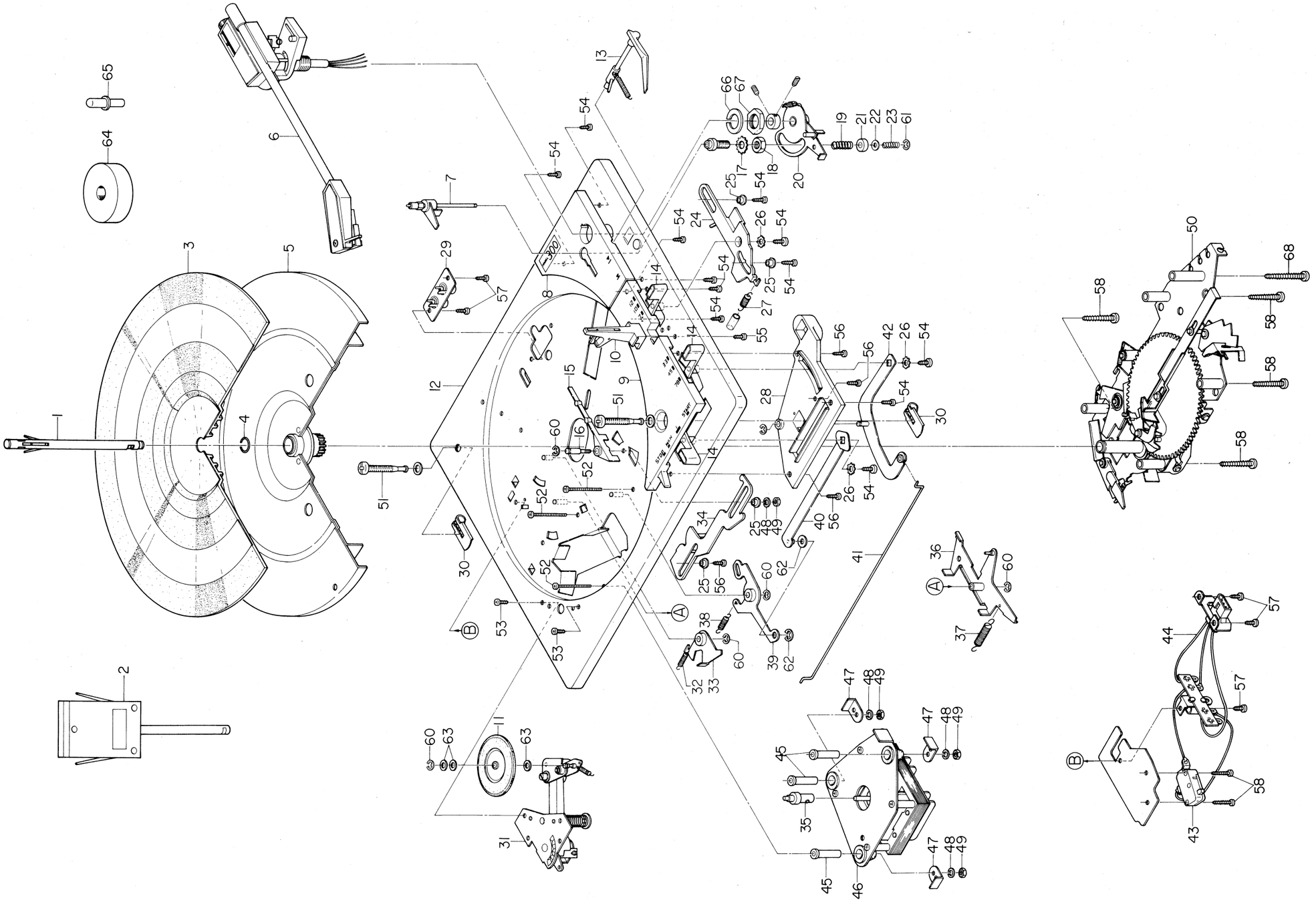


Fig. 26

EXPLODED VIEW OF CASSETTE TAPE DECK(SJD34)

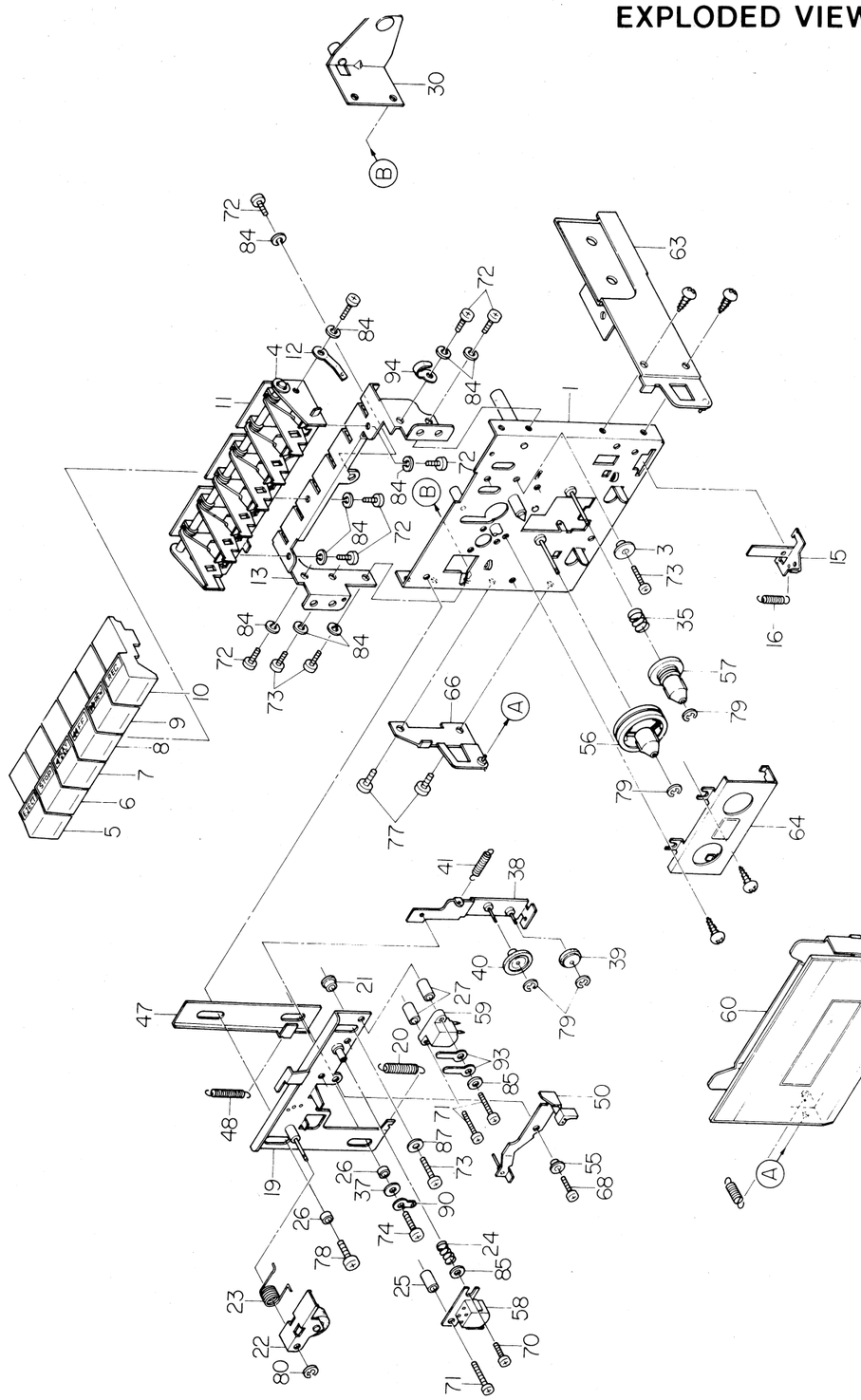


Fig. 23

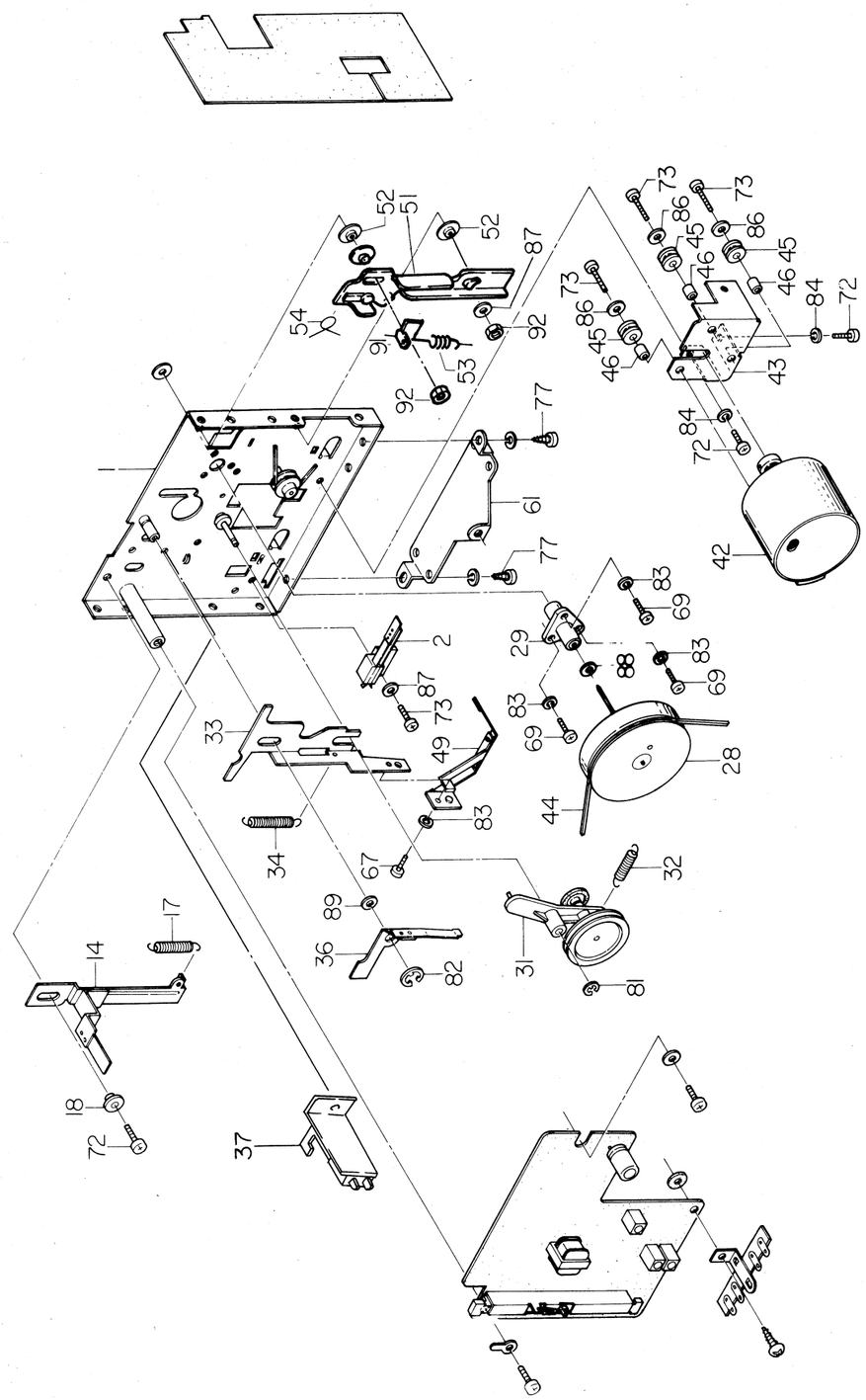


Fig. 24

PARTS LOCATIONS

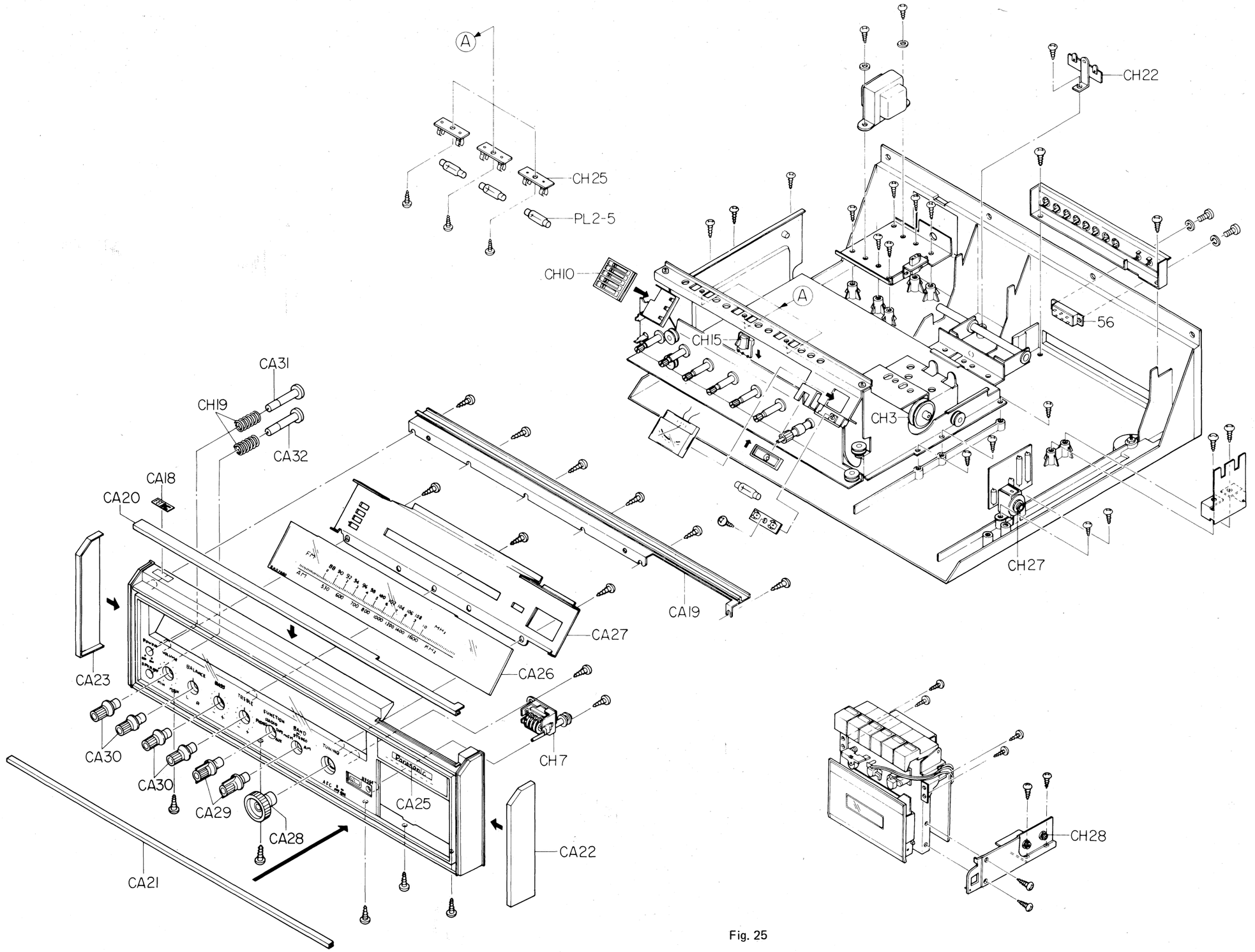


Fig. 25

REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
TRANSISTORS AND INTEGRATED CIRCUITS				
TR101	2SK19GR	FM RF Amplifier	1	X
TR102, 201	2SC1359B	FM Mixer, AM Converter	2	New X
TR103	2SC1359C	FM Oscillator	1	New X
TR301	2SC178A-D	Stereo Eye	1	X
TR501～504, 803～806, 603, 604	2SC644R	Phono Equalizer, Tone Amp, Tape Equalizer	10	X
TR601, 602	2SC644S	Pre-amplifier	2	X
TR701～704	2SA641L, M	1st AF Amplifier	4	X
TR705, 706	2SC828Q, R	2nd AF Amplifier	2	X
TR707, 708	2SC1266A	Driver	2	X
TR709, 710	2SD317O	Power Output	2	New X
TR711, 712	2SB512O	Power Output	2	New X
TR713	2SC1317QR	Ripple Filter	1	New X
TR801	2SB175B	Bias Oscillator	1	X
TR802	2SB324V, K, L	Bias Amplifier	1	X
TR901	2SB324V,K,L	Stabilizer	1	X
INTERGRATED CIRCUITS				
IC201	AN210B	IF Amplifier	1	X
IC301	AN211B	FM MPX Amplifier	1	X
DIODES				
D201, 206	0A90	AM D.AGC AM Detector	2	X
D202, 203	0A90	FM AGC	2	X
D204, 205	2-0A90	FM Detector (pair)	2	X
D701, 702	SVDVD1213-1	AOC	2	X
D801	1S1211	AOC	1	X
D802, 803	0A90	Rectifier	2	X
D901	SVD16C4B1P-M	Rectifier	1	X
D902, 904	RVD10DC1	Rectifier	1	X
D903, 905	RVD10DC1R	Rectifier	1	X
D906	SVD02Z9.5A	Stabilizer	1	X
THERMISTOR				
TH801	RRT103	Temperature Compensator	1	X
INDICATOR				
	SSM18	Level Meter (REC)	1	X
COILS AND TRANSFORMERS				
L101	SLA4P10	FM Antenna Coil	1	Y
L102	SLD4Y10	FM Detector Coil	1	Y
L103	SLQY11G-2	Trap Coil	1	Y
L104	SLO4P4	FM Oscillator Coil	1	Y
L105	SLQX250-1	Choke Coil	1	Y
L201	SLA1C2M	LW Antenna Coil	1	Y
L202	SLF2E20	MW Ferrite Antenna Coil	1	New Y
L203	SLA3C2	SW Antenna Coil	1	New Y
L204	SLO1C8	LW Oscillator Coil	1	New Y
L205	SLO2C28	MW Oscillator Coil	1	New Y
L206	SLO3C2	SW Oscillator Coil	1	New Y
L207, 401, 402 404	ELQ5A9R	Choke Coil	4	Y
L301	SLQV393-4Y	SCA Filter Coil	1	Y
L1, 2, 404	ELQ250A999	Noise Filter Coil	3	Y
L802, 803	RLQC542-T	Bias Trap Coil	2	Y
L3, 4	SLQY35G-2D	RFC	2	Y
L801	SLT6E2-D	Choke Transformer	1	Z
T101	SLI4B102	FM 1st IFT	1	X
T201, 203	SLI4B202	FM 2nd and 3rd IFT	2	X
T202	SLI2B106	AM 1st IFT	1	X
T204	SLI2B104	AM 2nd IFT	1	X
T205	SLI4B204M	FM 4th IFT	1	X
T206	SLI2B404	AM 2nd IFT	1	X
T207	SLI4B502	FM Disc. IFT	1	X
T208	SLI4B506	FM Disc. IFT	1	X
T301	SLM2D2-2K	19kHz Coil	1	X
T302	SLM3D2-2K	38kHz Coil	1	X
CF-1	SVFCF10M12CR	Ceramic Filter	1	New
T901	SLT5N8-D	Power Transformer	1	New X
T801	SLD9Z10-T	AC Bias Oscillator	1	X
COMPONENT COMBINATION				
M1	EXAF203Z471	0.02μF, 470Ω (two)	1	Y
M2	EXA5DL040C	4.7kΩ (two), 330pF (three)	1	Y
M3 (TT1, TT2)	SXAM674F	35mH, 2200pF, 30pF, 50kΩ	2	Y
RESISTORS (Main Circuit)				
R218, 219, 221, 704	ERD14TJ560	56Ω 1/4Watt ±5% Carbon	4	Z
R206, 207, 208, 212, 213, 229, 717, 718, 719, 720	ERD14TJ101	100Ω 1/4Watt ±5% Carbon	10	Z
R211, 635, 636	ERD14TJ151	150Ω 1/4Watt ±5% Carbon	3	Z
R106, 223, 226, 241, 609, 610, 901	ERD14TJ221	220Ω 1/4Watt ±5% Carbon	7	Z
R210, 730	ERD14TJ331	330Ω 1/4Watt ±5% Carbon	2	Z
R731	ERD14TJ391	390Ω 1/4Watt ±5% Carbon	1	Z
R102, 308	ERD14TJ471	470Ω 1/4Watt ±5% Carbon	2	Z
R215	ERD14TJ561	560Ω 1/4Watt ±5% Carbon	1	Z
R615, 616	ERD14TJ182	1.8kΩ 1/4Watt ±5% Carbon	2	Z
R203, 205, 227, 228, 230, 302, 701, 702, 732, 904	ERD14TJ102	1kΩ 1/4Watt ±5% Carbon	10	Z
R105, 112, 303, 629, 630	ERD14TJ152	1.5kΩ 1/4Watt ±5% Carbon	5	Z

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
R304, 621, 622, 633, 634, 729	ERD14TJ222	2.2kΩ 1/4Watt ±5% Carbon	6	Z
R307, 709, 710	ERD14TJ272	2.7kΩ 1/4Watt ±5% Carbon	3	Z
R222, 225, 310, 311, 619, 620, 903	ERD14TJ332	3.3kΩ 1/4Watt ±5% Carbon	7	Z
R607, 608	ERD14TJ392	3.9kΩ 1/4Watt ±5% Carbon	2	Z
R231, 631, 632	ERD14TJ472	4.7kΩ 1/4Watt ±5% Carbon	3	Z
R217	ERD14TJ562	5.6kΩ 1/4Watt ±5% Carbon	1	Z
R202, 216, 220, 305	ERD14TJ682	6.8kΩ 1/4Watt ±5% Carbon	6	Z
R224, 603, 604, 707, 708	ERD14TJ822	8.2kΩ 1/4Watt ±5% Carbon	5	Z
R101, 104, 108, 239, 705, 706, 711, 712, 735, 736	ERD14TJ103	10kΩ 1/4Watt ±5% Carbon	10	Z
R214	ERD14TJ123	12kΩ 1/4Watt ±5% Carbon	1	Z
R601, 602	ERD14TJ153	15kΩ 1/4Watt ±5% Carbon	2	Z
R201, 625, 626	ERD14TJ183	18kΩ 1/4Watt ±5% Carbon	3	Z
R110, 111, 238, 232, 240	ERD14TJ223	22kΩ 1/4Watt ±5% Carbon	5	Z
R103	ERD14TJ273	27kΩ 1/4Watt ±5% Carbon	1	Z
R237, 312, 313, 314, 315, 623, 624, 627, 628	ERD14TJ563	56kΩ 1/4Watt ±5% Carbon	9	Z
R306	ERD14TJ823	82kΩ 1/4Watt ±5% Carbon	1	Z
R236, 611, 612	ERD14TJ224	220kΩ 1/4Watt ±5% Carbon	3	Z
R617, 618	ERD14TJ564	560kΩ 1/4Watt ±5% Carbon	2	Z
R613, 614	ERD14TJ154	150kΩ 1/4Watt ±5% Carbon	2	Z
R727, 728, 902, 906	ERD12TJ220	22Ω 1/2Watt ±5% Carbon	4	Z
R713, 714, 715, 716	ERD12TJ221	220Ω 1/2Watt ±5% Carbon	4	Z
R722	ERD12TJ120	12Ω 1/2Watt ±5% Carbon	1	Z
R605, 606	ERC12GK155	1.5MΩ 1/2Watt ±10% Carbon	2	Z
R723, 724, 725, 726	ERF3SKR39	0.39Ω 3Watt ±10% Solid	4	Z
R209,	ERD14TJ4R7	4.7Ω 1/4Watt ±5% Carbon	2	Z
R309	ERD14TJ220	22Ω 1/4Watt ±5% Carbon	1	Z
R301	ERD14TJ390	39Ω 1/4Watt ±5% Carbon	1	Z
R234	ERD14TJ181	180Ω 1/4Watt ±5% Carbon	1	Z
R233	ERD14TJ683	68kΩ 1/4Watt ±5% Carbon	1	Z
R235	ERD14TJ334	330kΩ 1/4Watt ±5% Carbon	1	Z
R637, 638	ERD14VJ682	6.8kΩ 1/4Watt ±5% Carbon	2	Z
(Tape Equalizer Circuit)				
R810	ERD14VJ180	18Ω 1/4Watt ±5% Carbon	1	Z
R806, 811	ERD14VJ220	22Ω 1/4Watt ±5% Carbon	2	Z
R805	ERD14VJ101	100Ω 1/4Watt ±5% Carbon	1	Z
R425	ERD14VJ561	560Ω 1/4Watt ±5% Carbon	1	Z
R403, 404, 409, 410, 429, 430, 801, 804	ERD14VJ102	1kΩ 1/4Watt ±5% Carbon	8	Z
R419, 420	ERD14VJ182	1.8kΩ 1/4Watt ±5% Carbon	2	Z
R405, 406	ERD14VJ332	3.3kΩ 1/4Watt ±5% Carbon	2	Z
R813, 814	ERD14VJ222	2.2kΩ 1/4Watt ±5% Carbon	2	Z
R803, 809	ERD14VJ392	3.9kΩ 1/4Watt ±5% Carbon	2	Z
R422	ERD14VJ472	4.7kΩ 1/4Watt ±5% Carbon	1	Z
R807, 808	ERD14VJ183	18kΩ 1/4Watt ±5% Carbon	2	Z
R413, 414, 802, 423, 424	ERD14VJ273	27kΩ 1/4Watt ±5% Carbon	5	Z
R408	ERD14VJ473	47kΩ 1/4Watt ±5% Carbon	1	Z
R417, 418	ERD14VJ393	39kΩ 1/4Watt ±5% Carbon	2	Z
R431, 432	ERD14VJ563	56kΩ 1/4Watt ±5% Carbon	2	Z
R427, 428	ERD14VJ184	180kΩ 1/4Watt ±5% Carbon	2	Z
R415, 416	ERD14VJ224	220kΩ 1/4Watt ±5% Carbon	2	Z
R411, 412	ERD14VJ564	560kΩ 1/4Watt ±5% Carbon	2	Z
R401, 402	ERD14TJ100	10Ω 1/4Watt ±5% Carbon	2	Z
R421	ERD14TJ472	4.7kΩ 1/4Watt ±5% Carbon	1	Z
R407	ERD14TJ473	47kΩ 1/4Watt ±5% Carbon	1	Z
(Phono Equalizer Circuit)				
R509, 510	ERD14VJ681	680Ω 1/4Watt ±5% Carbon	1	Z
R501, 502, 511, 512	ERD14VJ222	2.2kΩ 1/4Watt ±5% Carbon	4	Z
R513, 514	ERD14VJ682	6.8kΩ 1/4Watt ±5% Carbon	2	Z
R517, 518	ERD14VJ822	8.2kΩ 1/4Watt ±5% Carbon	2	Z
R505, 506, 507, 508	ERD14VJ563	56kΩ 1/4Watt ±5% Carbon	4	Z
R515, 516, 519, 520	ERD14VJ104	100kΩ 1/4Watt ±5% Carbon	4	Z
R503, 504	ERD12TJ273	27kΩ 1/2Watt ±5% Carbon	2	Z
(Power Supply Circuit)				
R905	ERD12TJ181	180Ω 1/2Watt ±5% Carbon	1	Z
R2, 3	ERD12TJ331	330Ω 1/2Watt ±5% Carbon	2	Z
R4, 5	ERM6P680	68Ω 6Watt ±10% Wire	2	Z
(Chassis)				
R9, 10	ERD14TJ393	39kΩ 1/4Watt ±5% Carbon	2	Z
R7, 8	ERD14TJ104	100kΩ 1/4Watt ±5% Carbon	2	Z
R1	ERC12GK100	10Ω 1/2Watt ±10% Solid	1	Z
CAPACITORS (Main Circuit)				
C208	ECCD1H070D	7pF 50WV ±0.5pF Ceramic	1	Z
C110	ECCD1H020C	2pF 50WV ±0.25pF Ceramic	1	Z
C210	ECCD1H050C	5pF 50WV ±0.25pF Ceramic	1	Z
C105	ECCD1H080D	8pF 50WV ±0.5pF Ceramic	1	Z
C103, 112, 114, 116	ECCD1H100K	10pF 50WV ±10% Ceramic	4	Z
C101	ECCD1H120K	12pF 50WV ±10% Ceramic	1	Z
C113	ECCD1H180K	18pF 50WV ±10% Ceramic	1	Z
C104	ECCD1H150K	15pF 50WV ±10% Ceramic	1	Z
C205	ECCD1H200K	20pF 50WV ±10% Ceramic	1	Z
C115	ECCD1H220K	22pF 50WV ±10% Ceramic	1	Z

REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
C102	ECCD1H270K	27pF 50WV ±10% Ceramic	1	Z
C202	ECCD1H390K	39pF 50WV ±10% Ceramic	1	Z
C228	ECCD1H470K	47pF 50WV ±10% Ceramic	1	Z
C201	ECCD1H560K	56pF 50WV ±10% Ceramic	1	Z
C234	ECCD1H151K	150pF 50WV ±10% Ceramic	1	Z
C106, 107, 204, 216, 221, 224, 225, 231, 235, 236, 237	ECKD1H223ZFZ	0.022μF 50WV +80, −20% Ceramic	11	Z
C111, 117, 233	ECKD1H102MD	0.001μF 50WV ±20% Ceramic	3	Z
C118, 203, 213, 219	ECDK1H103MD	0.01μF 50WV ±20% Ceramic	4	Z
C212, 217	ECKD1H223MD	0.022μF 50WV ±20% Ceramic	2	Z
C214	ECKD1H332MD	0.0033μF 50WV ±20% Ceramic	1	Z
C711, 712, 713, 714	ECQM05472MZ	0.0047μF 50WV ±20% Polyester	4	Z
C613, 614	ECQM05682MZ	0.0068μF 50WV ±20% Polyester	2	Z
C309, 310	ECQM05103MZ	0.01μF 50WV ±20% Polyester	2	Z
C601, 602, 723, 724	ECQM05473MZ	0.047μF 50WV ±20% Polyester	4	Z
C615, 616	ECQM05683MZ	0.068μF 50WV ±20% Polyester	2	Z
C617, 618	ECQM05223MZ	0.022μF 50WV ±20% Polyester	2	Z
C717, 718	ECQM05104MZ	0.1μF 50WV ±20% Polyester	2	Z
C715, 716	ECQM05224MZ	0.22μF 50WV ±20% Polyester	2	Z
C302	ECQS1121JZ	120pF 100WV ±5% Styrol	1	Z
C207	ECQS1151KZ	150pF 100WV ±10% Styrol	1	Z
C109	ECQS1181KZ	180pF 100WV ±10% Styrol	1	Z
C709, 710	ECQS1221KZ	220pF 100WV ±10% Styrol	2	Z
C206, 229	ECQS1271KZ	270pF 100WV ±10% Styrol	2	Z
C209	ECQS1361KZ	360pF 100WV ±10% Styrol	1	Z
C215, 220	ECQS1152KZ	1500pF 100WV ±10% Styrol	2	Z
C211	ECQS1392KZ	3900pF 100WV ±10% Styrol	1	Z
C603, 604	ECEA50V1L	1μF 50WV Electrolytic	2	Y
C304	ECEA25V3R3L	3.3μF 25WV Electrolytic	1	Y
C108, 701, 702	ECEA25V4R7L	4.7μF 25WV Electrolytic	3	Y
C218, 705, 706	ECEA16V10L	10μF 16WV Electrolytic	3	Y
C303, 305, 306	ECEA10V33L	33μF 10WV Electrolytic	3	Y
C308	ECEA6V47L	47μF 6WV Electrolytic	1	Y
C908	ECEA16V47L	47μF 16WV Electrolytic	1	Y
C703, 704, 719	ECEA6V100L	100μF 6WV Electrolytic	3	Y
C707, 708	ECEA25V100L	100μF 25WV Electrolytic	2	Y
C909	ECEA16V100L	100μF 16WV Electrolytic	1	Y
C232	ECEA10V220L	220μF 10WV Electrolytic	1	Y
C720	ECEA25V1000L	1000μF 25WV Electrolytic	1	Y
C311	ECEA16V1000L	1000μF 16WV Electrolytic	1	Y
C722	ECEA16V470L	470μF 16WV Electrolytic	1	Y
C721	ECEA16V220L	220μF 16WV Electrolytic	1	Y
C609, 605, 606, 610, 611, 612	ECEB50V1L	1μF 50WV Electrolytic	6	Y
C230	ECEB25V4R7L	4.7μF 25WV Electrolytic	1	Y
C307	ECEB16V10L	10μF 16WV Electrolytic	1	Y
C301	ECAG10ER68-Y	0.68μF 10WV Electrolytic	1	Y
C607, 608, 619, 620	ECAG10ER22-Y	0.22μF 10WV Electrolytic	4	Y
C227	ECAG10ER1-Y	0.1μF 10WV Electrolytic	1	Y
(Equalizer Circuit)				
C405, 406	ECCD1H331K	330pF 50WV ±10% Ceramic	2	Z
C417, 418	ECCD1H560K	56pF 50WV ±10% Ceramic	2	Z
C811, 812	ECQM05472MZ	0.0047μF 50WV ±20% Polyester	2	Z
C409, 410 411, 412	ECQM05332MZ	0.0033μF 50WV ±20% Polyester	4	Z
C401, 402	ECQM05682MZ	0.0068μF 50WV ±20% Polyester	2	Z
C806	ECQM05333MZ	0.033μF 50WV ±20% Polyester	1	Z
C805	ECQM05104MZ	0.01μF 50WV ±20% Polyester	1	Z
C419, 420	ECQM05223MZ	0.022μF 50WV ±20% Polyester	2	Z
C807, 808	ECQS1151KZ	150pF 100WV ±10% Styrol	2	Z
C809, 810	ECQS1152KZ	1500pF 100WV ±10% Styrol	2	Z
C814	ECQS1182KZ	1800pF 100WV ±10% Styrol	1	Z
C801, 812	ECAG10ER1-Y	0.1μF 10WV Electrolytic	2	Y
C403, 404	ECAG25ER33	0.33μF 25WV Electrolytic	2	Y
C421, 422	ECAG10ER33-Y	0.33μF 10WV Electrolytic	2	Y
C815	ECEA25V4R7L	4.7μF 25WV Electrolytic	1	Y
C407, 408, 413, 414	ECEA16V10L	10μF 16WV Electrolytic	4	Y
C803	ECEA16V100L	100μF 16WV Electrolytic	1	Y
C804	ECEA6V220L	220μF 6WV Electrolytic	1	Y
C415	ECEA16V470L	470μF 16WV Electrolytic	1	Y
C423	ECKD1H223ZFZ	0.022μF 50WV +80, −20% Ceramic	1	Z
(Phono Equalizer Circuit)				
C503, 504	ECCD1H221K	220pF 50WV ±10% Ceramic	2	Z
C507, 508	ECCD1H331K	330pF 50WV ±10% Ceramic	2	Z
C511, 512	ECQM05103MZ	0.01μF 50WV ±20% Polyester	2	Z
C513, 514	ECQM05333MZ	0.033μF 50WV ±20% Polyester	2	Z
C501, 502	ECEA6V47L	47μF 6WV Electrolytic	2	Y
C509, 510	ECEA6V33L	33μF 6WV Electrolytic	2	Y
C517	ECEA16V220L	220μF 16WV Electrolytic	1	Y
C505, 506	ECEA50V1L	1μF 50WV Electrolytic	2	Y
C515, 516	ECEA16V10L	10μF 16WV Electrolytic	2	Y
(Power Supply Circuit)				
C906, 907	ECEB25V2200Z	2200μF 25WV Electrolytic	2	Y
C901	ECEA16V2200L	2200μF 16WV Electrolytic	1	Y
C902, 903, 904, 905	ECKD1H223ZFZ	0.022μF 50WV +80, −20% Ceramic	4	Z
(Chassis)				
C2	ECQB6473MZ	0.047μF 60WV ±20% Paper	1	Y
C3, 11, 12	ECKD1H223FZ	0.022μF 50WV +80, −20% Ceramic	3	Z
C7	ECEA50V1L	1μF 50WV Electrolytic	1	Y
C6	ECEA16V100L	100μF 16WV Electrolytic	1	Y
C4, 5	ECEB50Y1R5	1.5μF 50WV Electrolytic	2	Y
C10	ECKDES102MD	0.001μF 250WV ±20% Ceramic	1	Z

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
C9	ECKDDS101MB	100pF 250WV ±20% Ceramic	1	Z
C1	ECEA16V10L	10μF 16WV Electrolytic	1	Y
VARIABLE RESISTORS				
VR603～606	EVFN0AL45A54	Bass and Treble Control, 50kΩ	2	X
VR601, 602	EVG70AL45A54	Volume Control, 50kΩ	1	X
VR607	EVC52AL45G15	Balance Control, 100kΩ	1	X
VR701～703	EVLT9AA00B12	Gain Control, ICQ Control, 100Ω	3	Y
VR301	EVLS3AA00B53	Separation Control, 5kΩ	1	Y
VR302	EVLS3AA00B23	Separation Control, 2kΩ	1	Y
VR801	EVLT0AA00B23	AC Bias Osc. Control, 2kΩ	1	Y
VARIABLE CAPACITORS				
CV101～103, 201～202	SCVC158J124	Tuning Capacitor	1	New X
CT103	ECV1ZW10P32	Trimmer Capacitor	1	X
CT201～206	SCV3T12S	Trimmer Capacitor	1	New X
SWITCHES				
SF1～6	SSR26	Function Selector Switch	1	X
SB1～12	SSR34	Band Selector Switch	1	New X
ST	SSH20-1	REC Switch	1	X
S1	SSH18	AFC Switch	1	X
S1,2,3,4	SSH32	Speaker ON-OFF Switch, Tape Source	2	X
S6,7	ESB1140D5	Power Switch	1	New X
S9	SSS36	Stereo-Q Plex Switch	1	X
S5	SSR6	Power Source Selector	1	Y
CHASSIS				
CH1	SDT9472-2	Tuning Shaft Assembly	1	Y
CH2	RDS309	Drum Spring	2	Y
CH3	SDD1030-3	Drum	1	Y
CH4	RDR8	Pulley	5	Y
CH5	RDY2	Pulley Shaft	3	Y
CH6	SMQ570	Counter Belt	1	Y
CH7	SMQ572	Counter	1	Y
CH8		Not Used		
CH9	SHG950	Cushion Rubber, Stereo Eye	1	Y
CH10	SHG960	Cushion Rubber, Function	1	Y
CH11	SMZ30	Back Plate	1	New Z
CH12	SHR956	Black-out Cushion	1	New Y
CH13	SGL24	Stereo Indicator	1	Y
CH13	SGL48-1	AUX Indicator	1	New Y
CH14	SGL50-1	PHONO Indicator	1	New Y
	SMY22	Heat Sink	1	Z
	SMY46	Heat Sink	2	Z
	SMY96	Heat Sink	1	New Z
CH15	SXE56	Pointer Assembly	1	New Y
CH16	SHR102	Strain Relief Bushing	1	Z
CH17	SHP954	Lead Holder (Fiber)	1	New Y
CH18	SUS82	Spring A	1	Y
CH19	SUS84	Spring B	2	Y
CH20	RJR305	Terminal Block (3P)	1	Z
CH21	RJR401	Terminal Block (2P)	1	Z
CH22	SJR502	Terminal Block (2P)	1	Z
CH23	SJR402	Terminal Block (4P)	1	Z
CH25	SJF102	Lamp Holder	4	Y
CH26	SJF9004	Terminal Jack	1	Z
CH9	RDY8	Pulley Shaft	1	
	SGL52-1	RADIO Indicator		
	SGL54-1	TAPE Indicator		
CH27	SJJ32	Headphone Jack	1	Z
CH28	RJJ78	Mike Jack	1	Z
CH29	SJF9202	Terminal Jack, PHONO	1	Z
CH30	SJA68	Power Cord w/Plug	1	Y
CH31	XBAS2A2001	Fuse 2A	2	New X
CH32	XBAS2A1602	Fuse 1.6A	3	New X
CH33	XBAS2A1004	Fuse 1A	1	X
CH34	SJF104	Fuse Holder	3	Y
CH35	SJF202	Fuse Holder	2	Y
CH36	SJS9202	DIN FM Antenna	1	Y
CH37	SJS9206	DIN AM Antenna	1	Y
PL1	XAM16T300	Stereo Eye Lamp, 14V 60mA	1	X
PL6-9	XAM16T500	Function Lamp, 14V 60mA	4	X
PL2-5	XAMR20T	Dial Lamp, 12.6V 150mA	4	X
PL10	XAMST02	Dial Light, 6V 30mA	1	X
PACKINGS				
P1	SPG1232	Carton	1	New Z
P2	SPN1556	Pad, Center Unit	1	New Z
P3	SPN1558	Pad, Upper	1	New Z
P4	SPP106	Soft Cover	1	
P5	SPN1566	Pad, Changer	1	
P6	SPN1564	Pad A, Speaker System	2	New Z
P7	SPN1560	Pad B, Speaker System	1	New Z
P8	SPN1436	Pad C, Speaker System	1	New Z
P9	SPN1480	Pad, Cassette Cover	1	New Z
P10	SPN1562	Pad, Bottom	1	Z
ACCESSORIES				
A1	WM2201N	Mike	2	Z
A2	WN123N	Mike Stand	2	Z
A3	SQX5498	Operating Instructions	1	New Z

PARTS LOCATIONS (CHANGED)

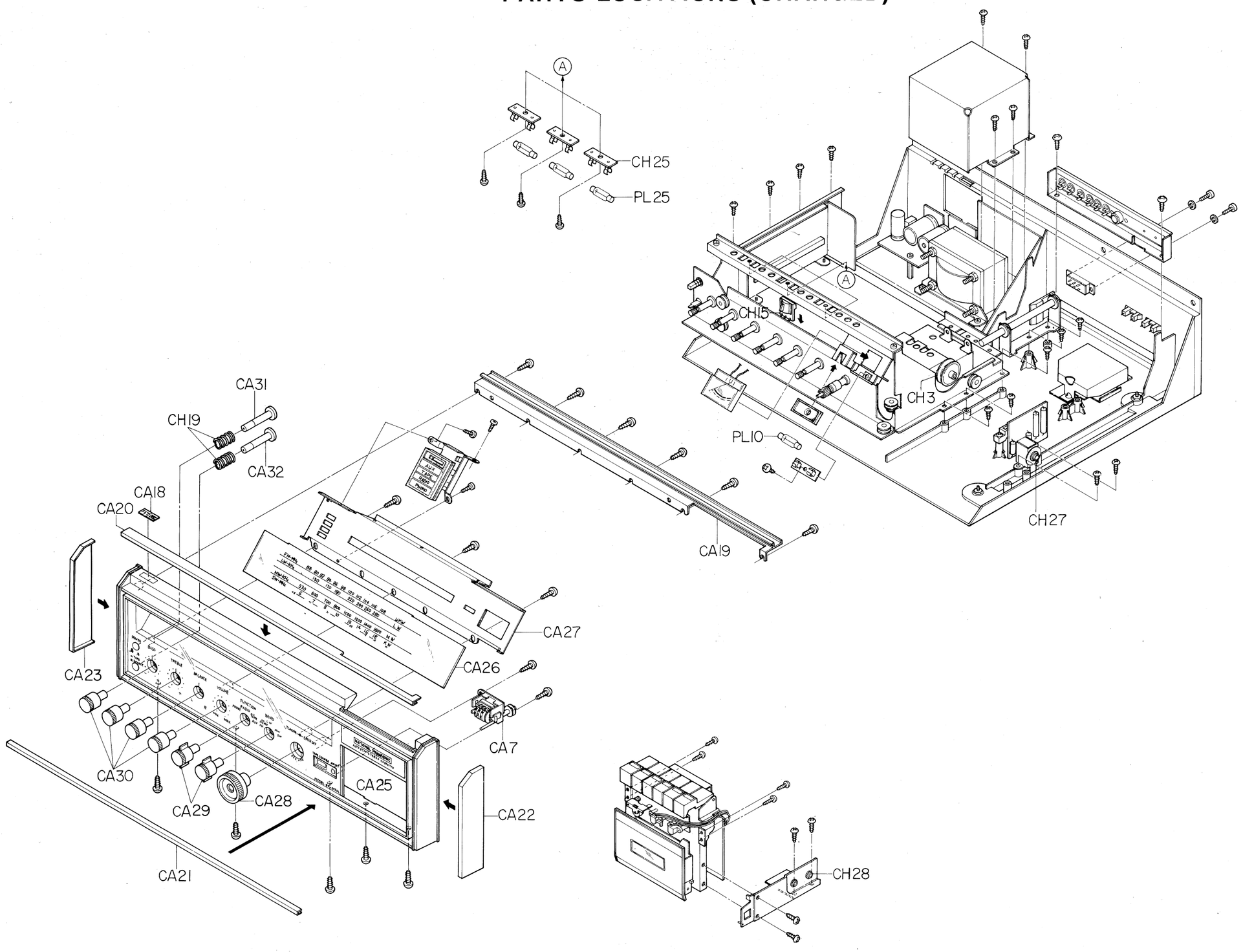


Fig. 25

REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
		CABINET		
CA1	SKM3841*	Cabinet	1	New
CA2	SBH9030	Hinge B	2	
CA3	SKE88*	Bracket, Rear	1	New
	SYK1018	Cabinet, Complete	1	New
CA4	SKE90*	Bracket, Right	1	New
CA5	SKE92-1*	Bracket, Left	1	New
CA6	SGX738-1	Trim, Jack Placement	1	New Z
CA7	SKU722*	Bottom Cover	1	New
	SYU194	Bottom Cover, Complete	1	New Z
CA8	SMC6006*	Shield Paper	1	
CA9	SKU741	Rear Cover	1	New Z
CA10	SGE452*	Dust Cover	1	
CA11	SBH9026	Hinge A	2	
	SYE214	Dust Cover Assembly	1	
CA12	SBH9028	Hinge Bracket	2	
CA13	SYE224	Badge, Dust Cover	2	
CA14	SKM3821	Body	1	New
CA15	SHG314	Rubber Foot	4	
	SYK1094	Body, Complete	1	New
CA16	SGK406	Terminal Placement, Indicator Plate	1	New Z
CA17	SGW2200-2	Escutcheon	1	New
CA18	SGB366	FET Badge	1	Z
CA19	SGX740	Trim, Upper-1	1	Z
CA20	SGX742	Trim, Upper-2	1	Z
CA21	SGX744	Trim, Bottom	1	Z
	SYP144	Escutcheon Assembly	1	
CA22	SGX746	Trim, Right	1	Z
CA23	SGX748	Trim, Left	1	Z
CA24	SGE456-1	Translucent Plate	1	New
CA25	SGB374	Badge	1	New Z
CA26	SKD2981	Dial	1	New Z
CA27	SDH148-1	Back Plate	1	New Z
CA28	SBN470	T Knob	1	New X
CA29	SBN466	S Knob	2	New X
CA30	SBN458	V Knob	4	X
CA31	SBN364	Power Button	1	X
CA32	SBN368	Monitor Switch Button	1	X
CA33	SBZ124	Speaker Switch Button	1	Z
CA34	SBZ4208	Cover, Speaker Switch Button	1	Z

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
		SPEAKER CABINET		
	SKM3741	Speaker Enclosure	2	New Z
	SYB84	Baffle Board Assembly	2	New Z
	SGB303-3	Badge, Baffle Board	2	New Z
	SYK1092	Speaker System Complete excluding Speaker	2	New
	SKU661	Rear Board Assembly	2	New Z
	SGN861	Name Plate, Speaker	2	New Z
SP1, 2	EAS18PL11S	Woofer, 18 cm Hi-compliance Cone Type	2	New X
SP3, 4	EAS5PH50SB	Tweeter, 5 cm Cone Type	2	New X
	SWJ10	Speaker Cord	2	Y

Notes:

1. Part Numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. X – Y rank:
   X rank parts will cover 80% of repair needs.
   X + Y rank parts will cover 95% of repair needs.
   Z rank parts are less necessary.

CASSETTE TAPE DECK REPLACEMENT PARTS LIST (SJD34)

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
1	SMQ644	Chassis Assembly	1	
2	SMQ646	Motor ON-OFF Switch	1	
3	SMQ648	Stopper, Head Panel	1	
4	SMQ650	Push Button Frame Ass'y	1	
5	SYE200	EJECT Button Ass'y	1	
6	SYE202	STOP Button Ass'y	1	
7	SYE204	PLAY-REC Button Ass'y	1	
8	SYE206	FF Button Ass'y	1	
9	SYE208	REC Button Ass'y	1	
10	SYE210	REW Button Ass'y		
11	SMQ652	Operating Lever, Push Button	1	
12	SMQ654	Spring, Operating Lever	1	
13	SMQ656	Push Button Frame Holder	1	
14	SMQ658	REC Safety Lever Ass'y	1	
15	SMQ660	REC Lever	1	
16	SMQ662	Spring, REC Lever	1	
17	SMQ664	Spring, REC Operating Plate	1	
18	SMQ666	Bearing, REC Lever	1	
19	SMQ668	Head Panel Ass'y	1	
20	SMQ670	Spring, Head Panel	1	
21	SMQ672	Bearing, Head Panel	1	
22	SMQ674	Pinch Roller Ass'y	1	
23	SMQ676	Spring, Pinch Roller	1	
24	SMQ678	Spring, R/P Head	1	
25	SMQ680	Collar, R/P Head	1	
26	SMQ682	Collar, Head Panel	2	
27	SMQ684	Collar, Erase Head	2	
28	SMQ686	Flywheel	1	
29	SMQ688	Shaft Ass'y, Flywheel	1	
30	SMQ690	Bracket Ass'y, Flywheel	1	
31	SMQ692	Take-up Idler Ass'y	1	
32	SMQ694	Spring, Take-up Idler Ass'y	1	
33	SMQ696	Main Plate	1	
34	SMQ698	Spring, Main Plate	1	
35	SMQ462	Spring, Reel		
36	SMQ702	REW Action Arm Ass'y	1	
37	SMQ770	Amp. ON-OFF Switch	1	
38	SMQ704	FF Idler Arm Ass'y	1	
39	SMQ706	FF Idler	1	
40	SMQ708	Take-up Idler	1	
41	SMQ710	Spring, FF Idler Arm	1	
42	MHI5R2CS	Motor	1	
43	SMQ712	Motor Bracket	1	
44	SMQ714	Main Belt	1	
45	SMQ716	Rubber Cushion, Motor	3	
46	SMQ718	Spacer, Motor	3	
47	SMQ720	Eject Plate	1	

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
48	SMQ722	Spring, Eject Plate	1	
49	SMQ724	Brake Arm Ass'y	1	
50	SMQ726	Sensing Plate, Ass'y, Auto Stop	1	
51	SMQ728	Stop Plate Ass'y	1	
52	SMQ730	Bearing, Auto Stop	2	
53	SMQ752	Spring, Auto Stop	1	
54	SMQ734	Spring, Auto Stop Lever	1	
55	SMQ736	Bearing, Sensing Plate	1	
56	SMQ738	Take-up Reel Ass'y	1	
57	SMQ740	Supply Reel Ass'y	1	
58	WY425Z	R/P Head	1	
59	WY235X	Erase Head	1	
60	SYE144	Cassette Cover Ass'y	1	
61	SMN418	Bracket, Cassette Cover (Bottom)	1	
62		Not Used		
63	SMN414	Bracket, Cassette Cover (Right)	1	
64	SUV72	Pulley Cover	1	
65		Not Used	1	
66	SMN416	Bracket, Cassette Cover (Left)	1	
67	XSN2+3	Screw 2mm x 3	1	
68	XSN2+4	Screw 2mm x 4	1	
69	XSN2+5	Screw 2mm x 5	3	
70	XSN2+6	Screw 2mm x 6	1	
71	XSN2+12	Screw 2mm x 12	3	
72	XSN2.6+4	Screw 2.6mm x 4	10	
73	XSN2.6+6	Screw 2.6mm x 6	9	
74	XSN2.6+10	Screw 2.6mm x 10	1	
75		Not Used		
76		Not Used		
77	XTN3+6B	Self Tapping Screw 3mm x 6	3	
78	XSB2.6+10	Bind Screw 2.6mm x 10	1	
79	SNT440	Circlip 1.2φ	4	
80	SNT450	Circlip 2φ	1	
81	SNT456	Circlip 2.3φ	1	
82	SNT454	Circlip 4φ	1	
83	XWA2B	Spring Washer 2φ	4	
84	XWA26B	Spring Washer 2.6φ	12	
85	XWE2	Washer 2φ	2	
86	XWE23	Washer 2.3φ	3	
87	XWE26	Washer 2.6φ	5	
88	SMQ64	Nylon Washer 2φ	1	
89	SNW622	Nylon Washer 6.2φ	1	
90	SJT202	Lug A	1	
91	SMQ750	Lug B	1	
92	XNG26BFN	Nut 2.6	2	
93	SMQ220	Lead Holder A	2	
94	SMQ744	Lead Holder B	1	

RECORD CHANGER REPLACEMENT PARTS LIST (SP-910E)

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
1	SFVS910-1Z	Automatic Spindle	1	
2	SH45A1	45 r.p.m. Automatic Spindle	1	
3	SFTG910C1A	Turntable Mat	1	
4	SFXT910-1	Stopper Ring	1	
5	SFTE913-1E	Turntable Ass'y	1	
6	EPU-24SMAD	Pickup Arm Ass'y	1	
7	SFKR910-1A	Lift Ass'y	1	
8	SFKC913-2	Escutcheon Moulding A	1	
9	SFKC913BO1	Escutcheon Moulding B	1	
10	SFKU913-1A	Arm Rest Ass'y	1	
11	SFMI910AO1E	Idler Wheel Ass'y	1	
12	SFBP913AA	Main Plate Ass'y	1	
13	SFKT910-3E	Cueing Lever Ass'y	1	
14	SFXT910A1	Speed Selector Lever	1	
15	SFUM910-2	Push Lever	1	
16	SFXG910-1	Shaft	1	
17	XWA8BFX	Spring Washer	1	
18	XNG8HFX	Nut	1	
19	SFQA910-5	Spring	1	
20	SFUP910-6A	P.U Control Lever Rivetting Ass'y	1	
21	SFXB910-7	Collar	1	
22	SFXW910-5	Washer	1	
23	SFQA910-4	Spring	1	
24	SFUM910-3	Select Lever	1	
25	SFXW910-1	Washer	4	
26	XWC4BFY	Washer	1	
27	SFQH327-2	Spring	1	
28	SFUM910-5	Knob Slide Base	1	
29	SJF3201-1	Pin Jack Receptacle	1	
30	SFUP411-6	Retaining Clip	2	
31	SFMT910-1A	Speed Change Base Plate Ass'y	1	
32	SFQH831-2	Spring	1	
33	SFUP910-2E	Idler off Latch	1	
34	SFUM910-1	Trip Lever	1	

REF. NO.	PART NO.	DESCRIPTION	PER SET (pcs.)	REMARKS
35	SFMC9106(60Hz)	Capstan(SFMC9105: 50Hz)	1	
36	SFUP910-1E	Idler off Lever	1	
37	SFQH910-1	Spring	1	
38	SFQH910-2	Spring	1	
39	SFUP910-3E	Reject Rod B	1	
40	SFUP910-4E	Reject Rod A	1	
41	SFQS910-1	Speed Change Rod	1	
42	SFUP910-5E	Speed Change Lever	1	
43	SFDSAM320039	Switch	1	
44	SFDA910EO1	AC Plug Ass'yss'y	1	
45	SFXO910A1	Collar	3	
46	4M-15VPL	Motor Ass'y	1	
47	SFMF910-1	Motor Plate Ass'y	3	
48	XWA4BFM	Spring Washer	3	
49	XNG4HFU	Nut	3	
50	SFUK910-1Z	Base Plate Complete Ass'y	1	
51	SFXG411-2	Transit Screw	2	
52	XSN3 + 40FU	Screw	6	
53	XTU3+6BFU	Screw	2	
54	XTN3+8BFU	Screw	17	
55	XTN3+12BFU	Screw	1	
56	XTN3+10BFU	Screw	5	
57	XTN3+6BFU	Screw	5	
58	XTN4+30DFU	Screw	4	
59	XXA3D5FU	Screw	2	
60	XUC3FY	Circlip	17	
61	XUC2FY	Circlip	5	
62	XUC4FY	Circlip	3	
63	SFXW551D2	Washer	7	
64	SFVA910-10	45 r.p.m. Manual Spindle	1	
65	SFVS910-17	Manual Spindle	1	
66	XWB145BFY	Washer	1	
67	SFP.EN9701	Nut	1	
68	XTN4+35BFU	Screw	1	

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